

THE IRON AGE

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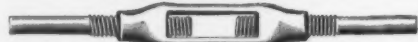
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SEE
PAGE 27



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49 CLIFF STREET

NEW YORK

THE IRON AGE

New York, Thursday, September 30, 1909.

The Bath Duplex Internal Grinding Machine.

In the opinion of the inventor, John Bath, president of the Bath Grinder Company, Fitchburg, Mass., his latest machine for internal grinding is the first to place this operation on a scientific and commercial basis. Throughout, the machine is a departure from former designs, but its two most prominently distinctive features

As illustrated, the machine is especially equipped for the use of automobile and automobile engine manufacturers. Examples of work done, shown on the floor in front of the machine in Fig. 1, are typical parts common in automobile construction. The spur gear standing on its edge in front of the machine is similar to the one being

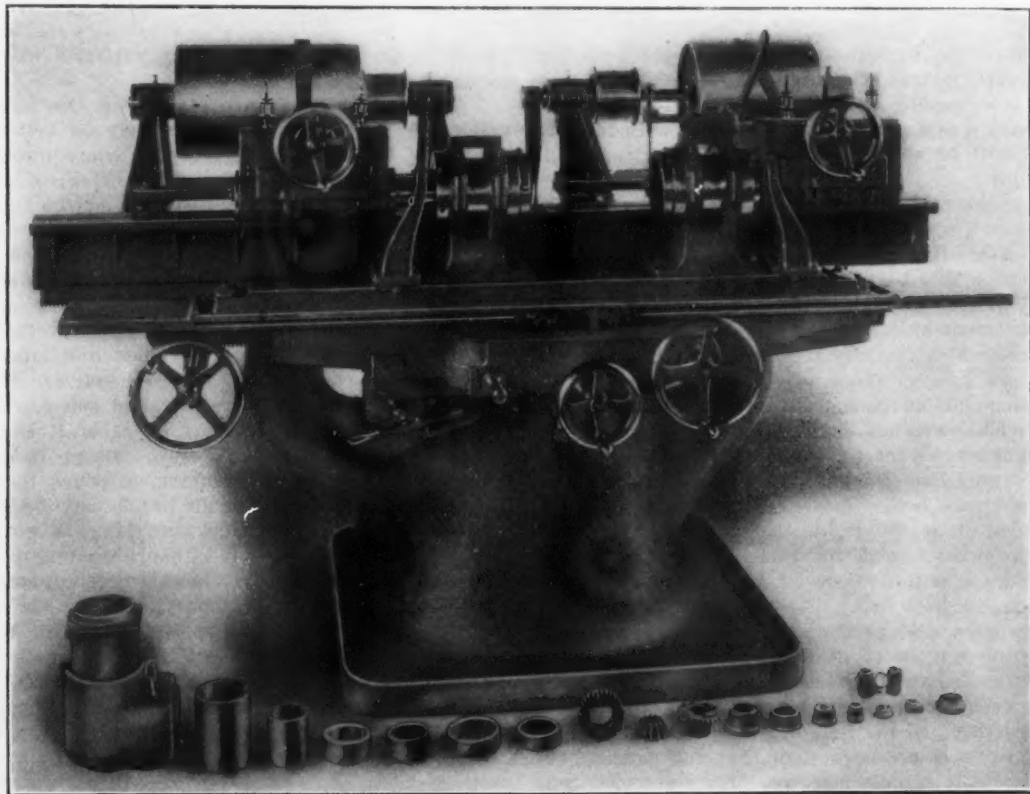


Fig. 1.—The Improved Duplex Internal Grinding Machine Built by the Bath Grinder Company, Fitchburg, Mass.

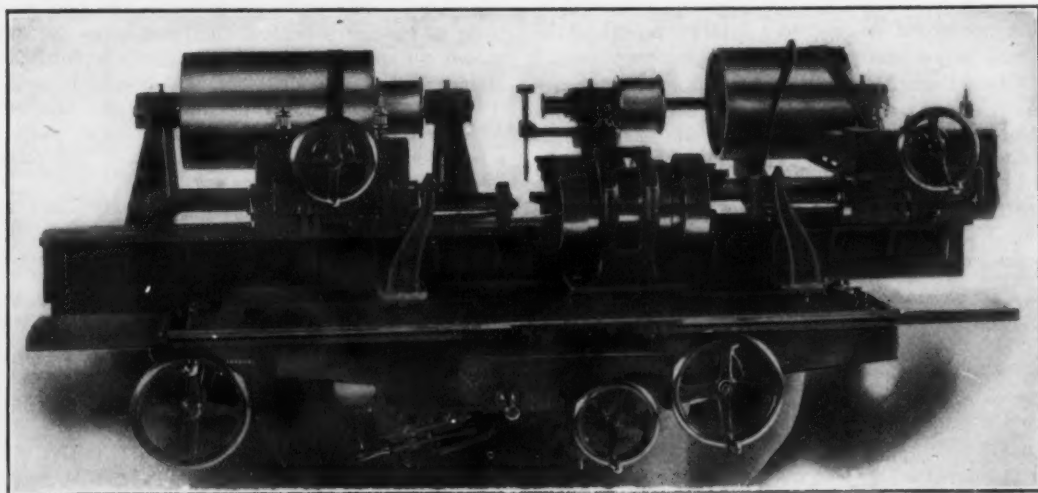


Fig. 2.—The Grinder Using Both Ends of a Single Headstock.

are in the manner of operation. By the provision of two heads two pieces of work can be ground at the same time instead of one—hence the name, duplex internal grinding machine—and because the grinding spindles pass through the back end of the headstock spindle instead of running in from the front, it is not necessary to shift the reciprocating slide to gauge, mount or remove work.

ground on the machine, as shown in the right hand headstock. When the machine is stopped one of the heads is in position instantly to be gauged, and to gauge the opposite end the reverse lever is thrown over, which brings the other head in position to gauge.

Many obstacles have been overcome by the new arrangement of introducing the grinding spindle from the

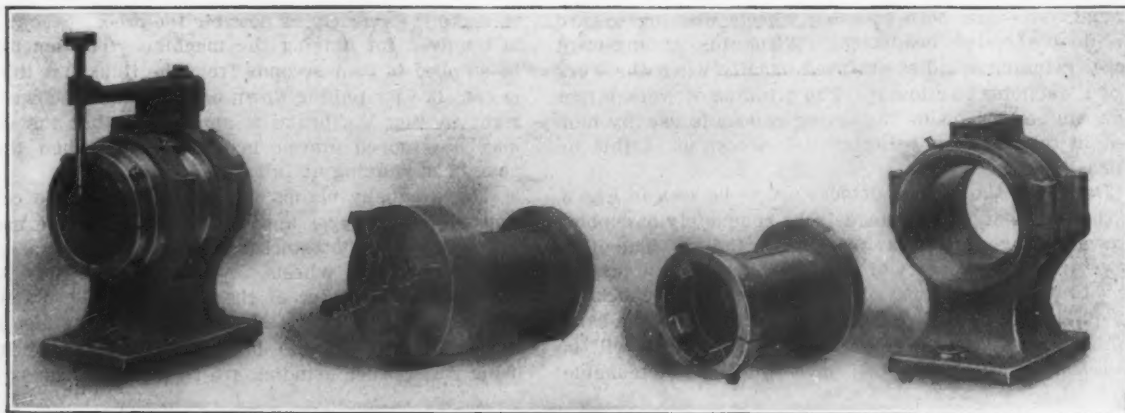


Fig. 3.—The Two Headstocks—One Assembled and the Other with Its Interchangeable Chucks Removed.

rear of the work, with the result that it has been possible to greatly increase the producing capacity. Internal grinding is commonly regarded as a very slow process for removing a large amount of stock, but with this machine, as will be shown later, such a criticism would hardly apply.

Each of the two headstocks mounted on the machine illustrated in Fig. 1 has an 8-in. diameter spindle. Work of up to 6-in. diameter can be held inside the chuck spindle, where it is best positioned not to feel the effect of vibration when the wheel is brought in contact with it. On the front of the machine and at the left of the hand wheel, which operates the cross adjustment, is the reverse lever handle. This lever normally reverses the reciprocating slide at the end of its stroke in either direction, but when given one quarter turn will automatically stop the slide when it reaches the end of its stroke. Usually the operator has to wait until the slide gets to the end of the stroke before throwing a lever to stop it.

In the head at the right, the grinding wheel may be seen projected beyond the work being ground. The other spindle is within the work and projects the same distance on the back end. The wheel being out of the way, the work can be gauged clear through, or removed, or another piece mounted in its place, without any interference with the grinding wheel. It is not necessary to move the reciprocating slide to gauge the work, as in general practice, and the time consumed in gauging both pieces of work is no more than that for gauging one piece on a single spindle machine. The headstock spindles are driven from the drum countershaft in the usual way, the only difference being that a belt is required for each headstock. The traveling diamond mounted on top of the headstock is used for truing the wheel as often as may be necessary.

Each internal grinding spindle head is equipped with an automatic sizing feed that feeds the wheel to the work independently of the other wheel. The automatic feeds are stopped by hinged arms that come in contact with the ends of the square rods shown on the headstocks, moving the rods which in turn control the feed mechanism. Each spindle head has a sizing device, so that each can be set, according to the amount of stock to be removed. An

adjustment is provided for any variation in the wheel diameter.

The spindle heads are carried on two long narrow slides in place of one slide, as may be better seen at A in Fig. 5. The advantage is that when pressure comes against the long overhanging spindle there is less chance of deflection through play in the fit of the slide, and a much finer adjustment can be obtained than with a wide slide. The construction is more rigid and firm, and prevents yielding when pressure comes against the grinding wheel. The two headstocks shown are for straight work only. Swivel headstocks can be furnished so that straight or taper work, large or small holes, and tapers of different angles can be ground. The heads are entirely independent of one another. A straight hole can be ground with one head and a taper with the other, if desired.

The two long narrow slides which support the spindle heads are mounted on a beam upon which they are adjustable, so that the spindle heads may be positioned with respect to the headstocks carrying the work instead of moving the latter, but either procedure is possible. The left spindle head has hand wheel adjustment; the other is normally left stationary. Usually the most convenient manner of setting up is to move the table until the right headstock is in proper relation with the right spindle head, then leaving the left headstock where it stands, to move the left spindle head into proper relation with it. As the spindles are driven by relatively long belts the belts can be run much slacker than when the center distances are shorter, and there is thereby less wear on the spindle.

A two-piece countershaft is used for the drive of the machine. One countershaft drives the jack shaft on the rear of the machine, and the headstocks are driven by a drum countershaft such as is regularly furnished with a grinding machine. The reciprocating slide is intended to run at from 2 to 12 ft. per minute, and has five changes of speed operated by a gear box underneath the cross slide, as shown at the left in Fig. 1, controlled by the lever there indicated.

Fig. 2 shows the machine with only one headstock in place, the other being removed, and a chuck is mounted on each end of the spindle, so that two pieces may be

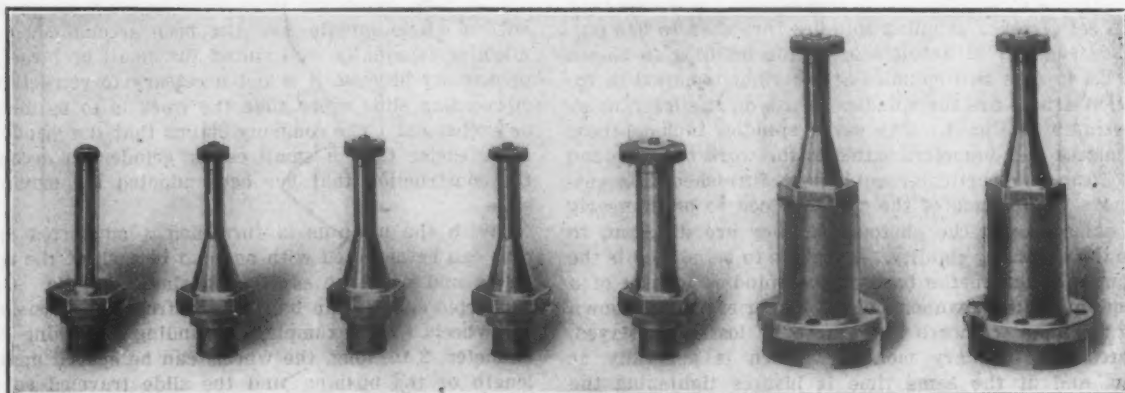


Fig. 4.—A Typical Equipment of Interchangeable Grinding Spindles.

ground as before, both grinding wheels working toward the double ended headstock. With this arrangement larger grinding spindles are used usually when the work is of a diameter to allow it. The grinding of work larger than can be held inside the spring chucks is usually handled in this manner, using geared chucks as in this instance.

Details of the two headstocks are to be seen in Fig. 3. At the left is one of the headstocks completely assembled shown holding a spur gear ready for grinding. The other views are those of parts of the other headstock unassembled, to show the method of holding the spring chucks in the quill. The four-jawed chuck is mounted in the same manner. At the outer edge of the spring chuck will be noticed four hardened steel jaws that are detachable.

to make it as nearly as possible foolproof. About 2.7 hp. is required for driving the machine. The machine can be stopped in four seconds from the time that the power is cut off. By pulling down on the handle shown on the right in Fig. 1 a brake is applied, so that the machine may be stopped almost instantly, even when the belts have been running at full speed.

The company claims that by virtue of the construction employed larger and wider wheels can be used and a larger amount of stock can be removed than is possible with smaller wheels. A clearance of only 1-16 in. between the diameter of the wheel and the diameter of the hole ground is sufficient. This is possible because of the rigidity of the headstocks. Arrangements for using water when grinding are furnished when required.

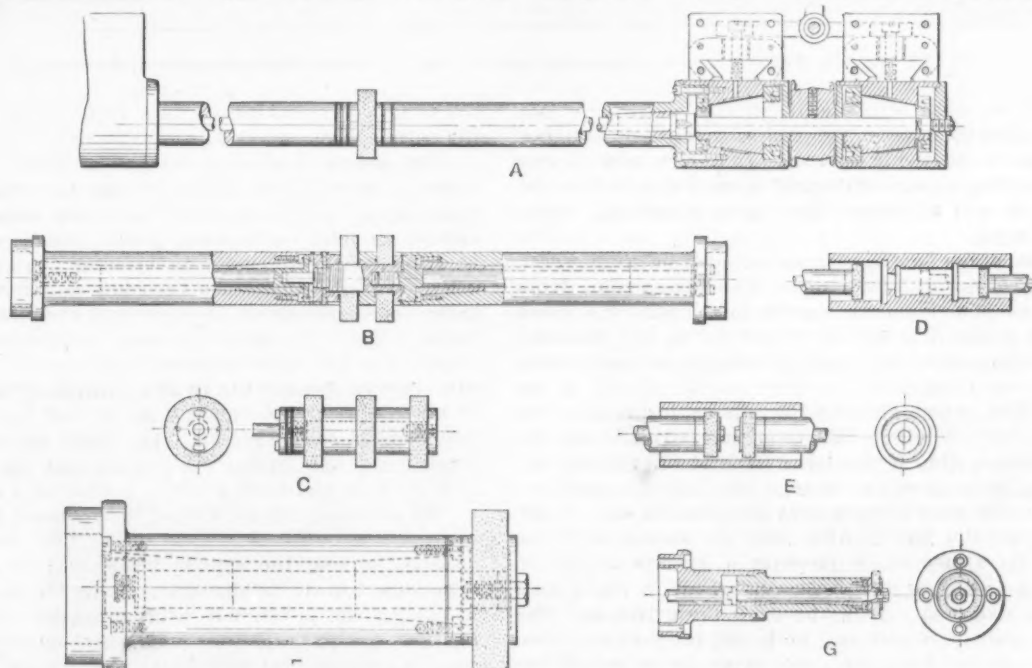


Fig. 5.—Details of Parts of the Bath Duplex Internal Grinder and Different Ways of Using the Wheels.

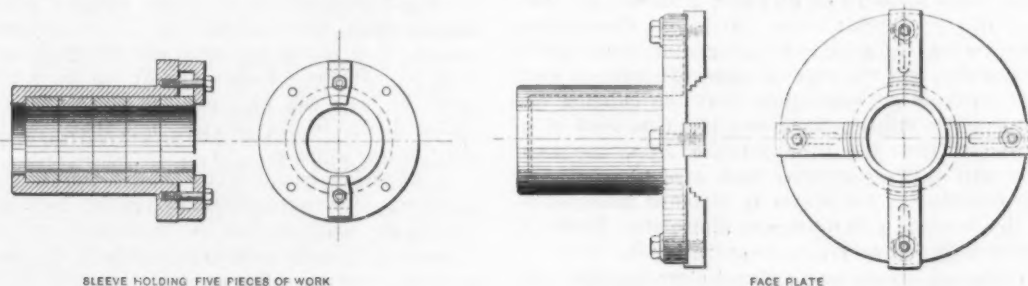


Fig. 6.—Typical Ways of Holding the Work.

These jaws are changed according to the diameter and size of the work to be ground. Special devices are furnished for holding either bevel or spur gears on the pitch line. Any number of sets of these jaws can be kept on hand for use with the spring chucks. The jaws can be ground on the machine, which keeps them absolutely true.

A set of seven grinding spindles furnished to one purchaser engaged in automobile engine building is shown in Fig. 4. The two spindles at the right mounted in extension arbors are the spindles in use on the machine as illustrated in Fig. 1. The seven spindles include those of lengths and diameters suited to the work to be ground and form the particular equipment furnished this customer. While some of the spindles look to be of nearly the same size in the photograph, they are different, to give the necessary rigidity. A feature to be noticed is the hexagon flange on the base of the spindles instead of a round nut with spanner holes. Experience has shown that spanner wrenches are apt to be lost or mislaid, whereas an ordinary monkey wrench is generally at hand, and at the same time it insures tightening the spindle sufficiently firmly. This is one of the several features which have been incorporated in this machine

As examples of the capabilities of this machine, there were recently ground on it manganese car wheels 16 in. diameter, with $3\frac{1}{8}$ -in. holes 6 in. long, from which 5-32-in. stock was removed in 55 min., from a rough cored hole with a single spindle. The grinding of a 15-16-in. hole, $1\frac{1}{4}$ in. long, removing from 0.006 to 0.008 in. in 2 min. with a single spindle, has also been accomplished. The machine is equally well suited for small or large work, principally because it is not necessary to retract the reciprocating slide every time the work is to be measured or exchanged. The company claims that the grinder will move easier than a small cutter grinder on account of the construction that has been adopted for moving the slide.

With the machine is furnished a supported spindle that can be mounted with one end in each of the spindle heads and used the same as a single spindle. On the supported spindle can be mounted from one to six grinding wheels. For example, in grinding a bushing $2\frac{1}{2}$ in. diameter, 2 in. long, the wheels can be spaced apart the length of the bushing and the slide traveled so as to pass the work over the six wheels before being reversed. When grinding a bushing held in a spring collet the two

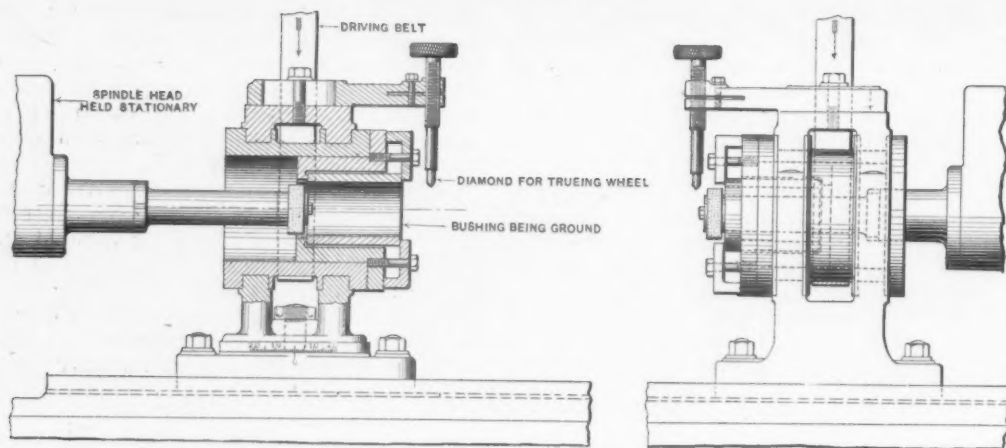


Fig. 7.—The Two Headstocks as Seen from the Front—One in Sectional Elevation.

single ended grinding wheels can be brought up together and operated at the same time. In this way stock can be removed to within 0.001 to 0.002 in. of size, and one of the wheels can be stopped and the hole finished with a single wheel. Still another method is to use a coarse wheel to rough and a fine wheel to finish the work. Work such as pneumatic hammer chambers that have four bearings to be ground concentrically can be finished without reversing the slide. The use with any kind of work of the quill chuck, open at both ends, permits gauging from both ends.

Fig. 5 shows a number of details having to do with the spindle. At A may be seen the construction of the spindle head slide in section at the right, referred to before, and also the manner of holding the grinding wheel on an arbor supported at each end in one of the grinding spindle heads. At B may be seen the construction of the joint between the parts of the arbor, also the mounting of two wheels at the center. With the use of this attachment one of the heads is the driver and the other is usually disconnected by taking off the belt. The drive from one is then transmitted to the other spindle head through the jaw arrangement shown at the center. The construction is such that dirt or grit cannot get into the parts, and a torsional strain on the spindle is done away with. C shows a central part adapted to be substituted for that in B, carrying three instead of two wheels. D shows the arrangement for grinding from both sides in the finishing of a part such as that of a pneumatic hammer, above alluded to. After the two spindles shown in the work have been used to grind corresponding diameters other size wheels are substituted to grind the two remaining different diameters. E shows the use of a wheel on each spindle operating in the same piece of work, the wheels being placed close together; as the slide does the traveling the wheels remain relatively the same distance apart, and there is no danger of conflict. F is a detail to double the scale of the other drawings, showing the construction of one of the spindles arranged for carrying a large wheel, and G is a detail of the mounting for a small diameter wheel.

Another way in which greater production may be obtained by saving time when turning out duplicate pieces is indicated in Fig. 6, showing five gear blanks assembled in a stack to grind the bores at one setting. The same illustration shows the chuck used for work too large to go in the bore of the headstock spindle and to be held with a spring chuck. Fig. 7 gives details of the headstock spindle, showing one head in sectional elevation from the front. Incidentally it shows also the section of the wheel when grinding a bushing and the manner of introducing the grinding spindle. The construction is sufficiently clearly brought out in the illustration to require no further description.

R. D. Beman, deputy commissioner of the Pennsylvania State Highway Department, Harrisburg, Pa., supplies some further information regarding the model Pennsylvania road, which was described in *The Iron Age* of September 2. He states that this road is an ordinary macadam road, constructed on a telford foundation. It

was built out of trap rock, according to the usual methods followed in building macadam highways. After the road was finished and had been in use for some time an experimental application of a dust-laying compound was made, with fairly satisfactory results. The wording of the original article appears to have led some readers to believe that the compound described had been applied directly to the surface of a dirt roadway. This is not correct.

The Westinghouse Air Brake Company's Report.

The annual report of the Westinghouse Air Brake Company for the year ending July 31, 1909, shows sales aggregating \$5,286,021. Following is the condensed income account compared with the previous year:

	1909.	1908.
Net earnings	\$2,039,273	\$2,014,756
Depreciation and patents purchased...	118,716	43,960
Balance	\$1,920,557	\$1,970,796
Dividends	1,374,481	1,787,110
Surplus.....	\$546,076	\$183,686
Previous surplus.....	4,911,674	7,477,988
Total surplus.....	\$5,457,750	\$7,661,874
Stock dividend.....		2,750,000
Profit and loss surplus.....	\$5,457,750	\$4,911,374

The report states that the net earnings for the late fiscal year period from all sources approximated 15 per cent. on the increased capital of \$14,000,000, out of which 10 per cent. has been paid in cash dividends, \$118,716 charged off against sundry accounts to cover depreciation and patents purchased and \$546,076 carried to surplus. The report continues:

"While these figures do not show marked change from those reported for the year ending July 31, 1908, they are, in fact, significant when the large volume of business carried over from 1907 to the following year is taken into consideration, and indicate a gratifying change in underlying trade conditions. As there has not been sufficient advance in the price of raw materials to substantially effect inventory valuation, the fund provided for the adjustment of this item remains at \$550,000, as for the previous year. A careful valuation of the physical property of the company has been made by a reliable appraisal company, the result of which shows that the item 'Widerding plant, including general office and sundries,' is carried at a very conservative figure. During the year the pension system, referred to in the last annual report, has been inaugurated, with highly satisfactory results."

The high steam shovel record for August on the Panama Canal excavation was made by a shovel working in the Culebra District, which excavated 45,694 cu. yds. of earth in 26 working days. A shovel working eight days in the Culebra District and 18 days in the Empire District excavated 16,755 and 26,518 cu. yd. respectively, a total of 43,273 cu. yd., the second best record for the month. A third shovel in the Culebra District made the high record for one day by excavating 2549 cu. yd. of rock and earth.

Special American Sensitive Radial Drills.

Special designs of the high speed sensitive radial drill built by the American Tool Works Company, Cincinnati, Ohio, and described in *The Iron Age*, March 25, 1909, have recently been introduced as better suited to certain conditions. The general design and operating principles of the machine proper remain the same as before, the modifications being mainly, in the one case, change of bed to give a lower table, and in the other change of drive for a motor connection and the addition of a tapping attachment.

The machines are built with 2 and 3 ft. arms. Fig. 1 shows the 3-ft. size mounted on a pedestal base, and not equipped with a box table. This type of machine is particularly convenient in the drilling of a multiplicity of holes in work which can be conveniently moved on a truck, or otherwise, beneath the spindle of the machine. This does away with considerable handling of the work and permits of its being moved from the drilling department along to the next department with the least possible delay. As all the bearings are ball bearing type, the drill will stand up to a speed of 2000 rev. per min. without sign of distress, but, of course, no twist drill will hold an edge at such a speed.

Fig. 2 shows a 2-ft. motor driven drill with tapping

the maximum of power intended for the machine. This drill will handle high speed twist drills up to 1 in. diameter, and will take care of 1-in. standard taps. When fitted with a tapping chuck it is particularly adapted for tapping small holes. The available high speeds have in a few instances enabled this machine to be used as a router.

The following table of a drilling test gives an idea of the drilling possibilities of the sensitive radial drilling machine.

Diameter of drill.	Speeds.		Feeds.		Net horse-power.	Remarks.
	Rev. per min.	Feet per min.	Approx. In. per rev.	Approx. In. per min.		
1/4-in. C.	900	59	0.15	Cast iron 1 in. thick.
1/2-in. H. S.	900	137.2	0.022	20	1.50	Cast iron 1 in. thick.
3/8-in. H. S.	900	147.2	0.015	12	3.0	Cast iron 1 in. thick.
3/4-in. H. S.	900	177	0.013	12	3.7	Cast iron 1 in. thick.
1-in. H. S.	455	119	0.0066	3	2.6	Cast iron 1 in. thick.
1-in. H. S.	785	207	0.0076	6	3.2	Cast iron 1 in. thick.
1/2-in. H. S.	900	137.2	0.037	16.8	1.2	Aluminum engine frames 1/2 in. thick. Drilled 14 holes in 25 sec.
1 10/16-in. H. S.	745	248	0.9	Alum. case. Drilled from the solid. Bosses drilled and faced in one operation.

Details of the dimensions and description of the

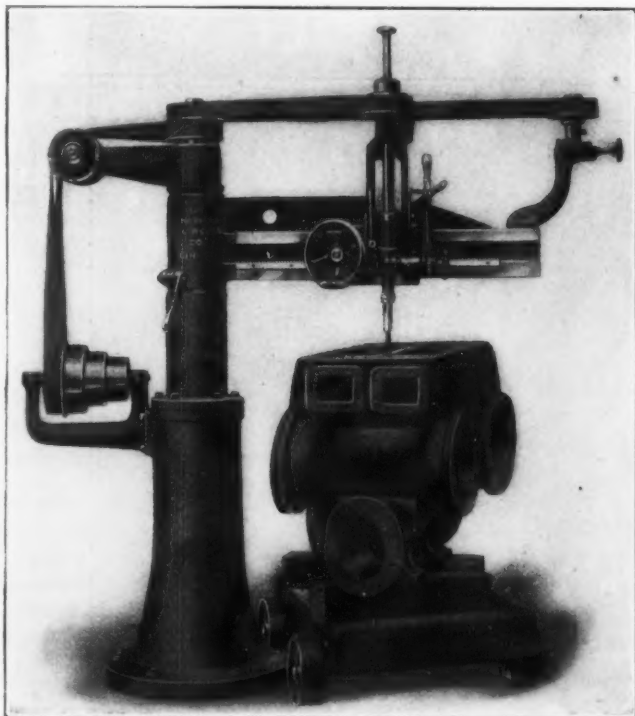


Fig. 1.—A 3-Ft. Sensitive Radial Drill with Pedestal Base Built by the American Tool Works Company, Cincinnati, Ohio.

attachment, which was exhibited at the Master Mechanics' and Master Car Builders' convention at Atlantic City last June, and attracted attention on account of the high speed with which it drilled cast iron. As will be seen from the engraving, the motor is mounted beneath the box table and is directly connected to the tapping attachment driving shaft by a belt. The motor used was a Lincoln variable speed, 3-to-1 motor, with speeds of 525 to 1575 rev. per min., which were under perfect control by the convenient hand wheel shown in the front of the motor. As near as could be ascertained, a 1/2-in. plate was drilled through with a 1/2-in. drill in 2 sec. The tapping attachment is under perfect control, in spite of the high speed of the spindle, by the lever shown at the base of the column. There are no gears in the drive of this machine, as the power is transmitted throughout by belts. Adjustments are provided for regulating the tension of both the overhead belt and that of the tapping attachment and motor. The frictions in the tapping attachment are of the company's patented type, which cannot become disengaged of themselves, after being once thrown in. They are of such large proportions as to transmit

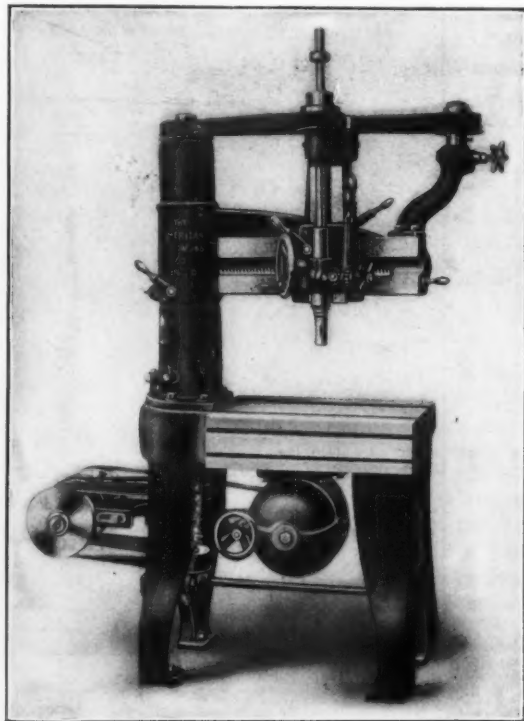


Fig. 2.—A Standard 2-Ft. Sensitive Radial Drill with Motor Drive and Tapping Attachment.

standard machines will be found in the article previously printed.

The Moran Engineering Company's new building, at 1246 First avenue, South, Seattle, Wash., is a reinforced concrete structure, with mill work floors and sprinkler system throughout, so that it is practically fireproof. There are 45,000 sq. ft. of space under roof, and the building is equipped with 3-ton elevators. All floors are designed for heavy working strain. The location is such that trackage facilities are at the back door and the offices and storeroom face on the leading business street in Seattle for the distribution of the company's class of stock. It is handling a general line of machinery in addition to acting as contracting engineer. The managers state that they believe from all indications from the past month's business, which is since occupying the new quarters, that the coming year will be a banner one for all people in this class of work. The officers of the company are as follows: John M. Moran, president and treasurer; James D. Mudge, vice-president, and Harold G. Stern, secretary.

MANGANESE STEEL PRODUCTS.

Progress With the Potter Process of Rolling as Employed at Paterson, New Jersey.

For several months the Manganese Steel Rail Company has been carrying on the manufacture of a number of manganese steel products in addition to rails at the plant of the Passaic Steel Company, Paterson, N. J. The organization of the Manganese Steel Rail Company to operate under the patents of W. S. Potter, formerly of the American Brake Shoe & Foundry Company, has been noted in these columns. Fred W. Snow is president; W. S. Potter, vice-president; R. J. Davidson, secretary and treasurer, and O. W. Cooke, general sales agent. Since it began operations at Paterson in the latter part of 1908 the company has turned out about 1000 tons of manganese steel products, chiefly rails, all of the latter being 85-lb. sections. More recently the 30-in. plate mill at the Passaic Steel Company plant has been put in service, and manganese steel plates varying in thickness from 1-16 in. to 1 in. have been rolled to supply a demand

crusher teeth are used in coal, coke and other crushers and are fitted to the crushing rolls by a parallel driving fit. They weigh from 1 to 1½ lb. each. The depression forged in the side is for the purpose of driving out the teeth. The rings or disks shown in Fig. 1 are used as washers at the foot of derricks. At the left of the view is a sample hammer, such as is used in pulverizing machines for reducing coal, ores, cement rock, quartz rock, &c. The approximate size is 12 x 4 x 1 in., with one or two holes of varying diameter. The weight of these hammers of manganese steel is 12 to 14 lb.

Fig. 2 represents one of three sections making up a screen 16 ft. long. Two of the sections are 5 ft. and one is 6 ft. long and each is composed of eight plates 19 in. wide and ½ in. thick. The perforations shown are 1¼ in. in diameter, and each plate contains 198 perforations. No difficulty has been experienced in making these

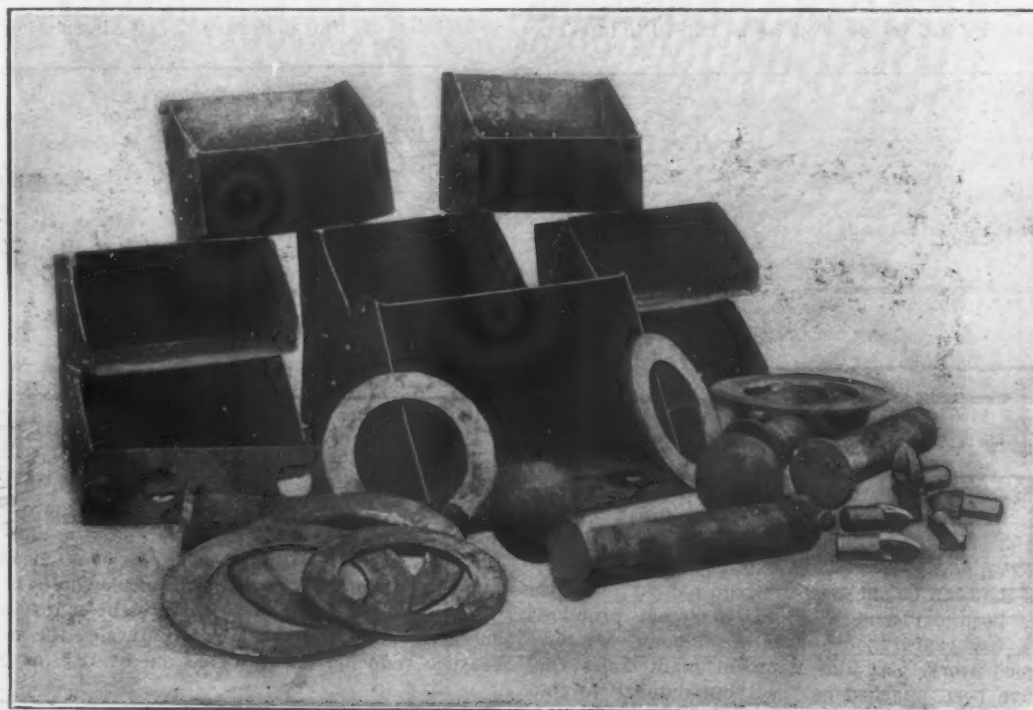


Fig. 1.—Various Rolled and Forged Products of Manganese Steel.

for steel having high resistance to abrasive wear, particularly wear due to the impact of hard substances. These plates have been used as chute linings and in the manufacture of screens for coal, cement rock and various ores. After being rolled from reheated slabs the plates are rapidly cooled. Manganese steel forgings have also been turned out, including crusher teeth, pins for dredge and locomotive works, and balls for cement mills.

Miscellaneous Products.

In Figs. 1 and 2 are shown some of the products of the Manganese Steel Rail Company apart from rails. The buckets in Fig. 1 are made of ½-in. plates. The larger size is 18 x 11½ x 18½ in., and weighs 40 lb. The smaller bucket is 10 x 7 x 13 in. and weighs 16 lb. These buckets are furnished for dredges, elevators, conveyors, &c. The rivets are of carbon steel. In some classes of heavier plate work the rivets also may be of manganese steel, thus avoiding the necessity of countersinking.

The forged pins are made according to specifications in a variety of sizes, with or without holes for cotter pins, &c. They range in weight from 1 oz. to 500 lb. Cotter pin holes can be made round, square or oblong. The balls used for reducing cement rock, limestone or other material range in diameter from 5 to 12 in. A 5-in. ball made of forged manganese steel weighs 20 lb. The

perforations and doing the necessary countersinking. These screens have been in use at stone crushers and at mines with good results. The weight of one screen section, as shown in the illustration, is 750 lb. A combination screen is also manufactured, composed of a plate of manganese steel on the inside and of an outer plate of ordinary steel. In the case of a ½-in. screen each plate is ¼ in. thick. When the manganese steel plate has reached a point where it can give no further wear, a new one is put in without the cost and time involved in renewing the entire screen.

Rolling Manganese Steel Rails.

In the rolling of rails at Paterson the 28-in. structural mill has been employed. The steel is made in an open hearth furnace and the ingots range up to 7000 lb., 20 or 21 in. at the butt and 17 or 18 in. at the top. From the blooming mill the blooms, which are 7 ft. 6 in. long and 8 x 5 in. for a 33-ft. rail, are taken to the heating furnaces connected with the structural mill. There are five passes on the roughing mill and the piece is then transferred to the finishing stand alongside, in which there are five passes. From the rolls the rail passes to the hot bed, where it is pulled up inclined steel skids into a quenching tank 40 ft. long by 5 ft. by 15 in., filled with water. The quenching operation requires about a minute and the rail is then passed through heavy rolls

for straightening. Cambering as employed with carbon rails does not answer with manganese rails owing to their ductility. Cropping is done by a disk saw driven by an electric motor. The saw is 46 in. in diameter, $\frac{3}{8}$ in. thick, and has a plain edge. The motor is of 200 hp., and the time required for cutting an 85-lb. rail is about

the bath, or whether it be added after the other constituents of the charge have been melted and refined.

Manganese steel poured in an open mold without covering the metal is found to pipe rather deeply, the pipe being due rather to shrinkage than to gases. The melting point is low, and if the steel is very hot when

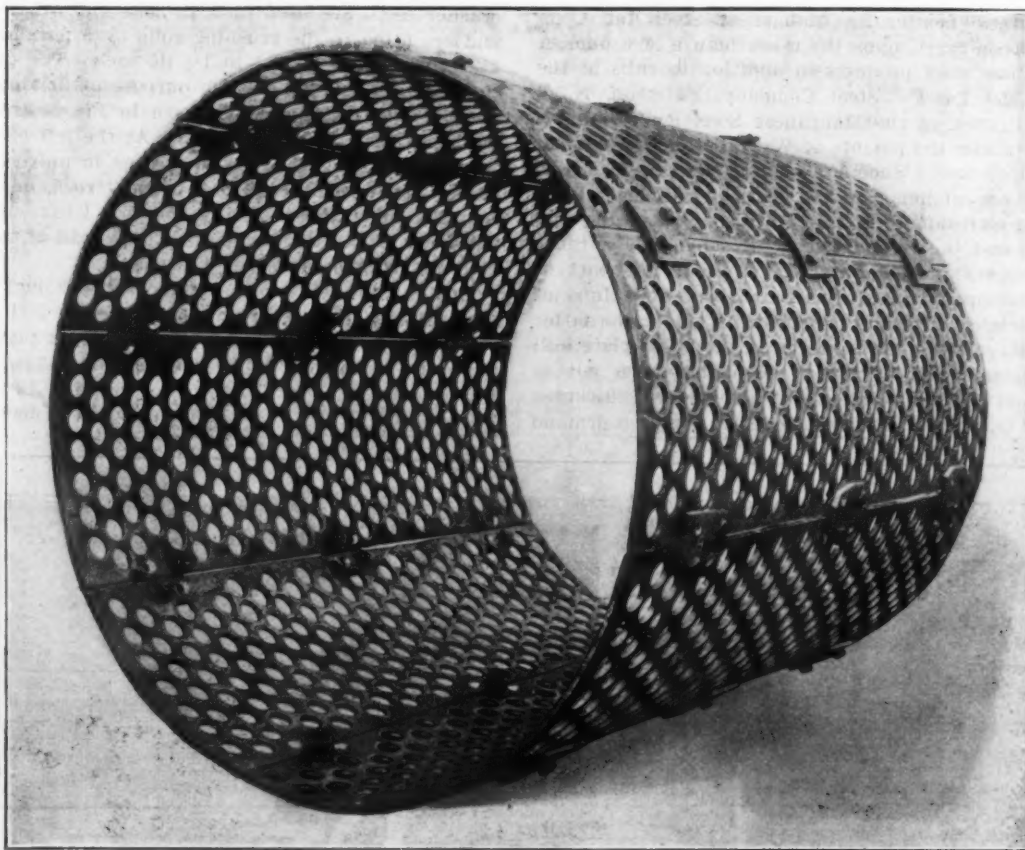


Fig. 2.—A 5-Ft. Section of a Screen Made of Manganese Steel Plates, Each Plate Having 198 Perforations.

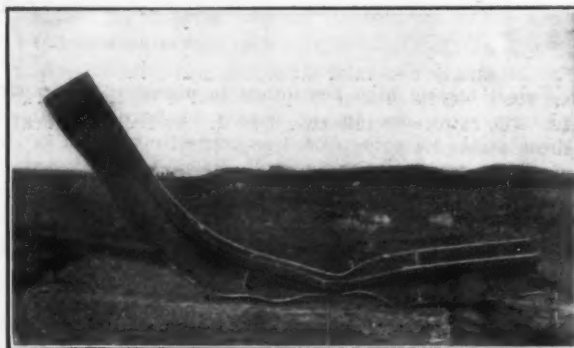
40 seconds. The difficulties of machining manganese rails are well known, owing to their great toughness and strength, combined with moderate hardness. Drilling fish plate holes is very expensive and the best tool steels that can be obtained are required. An inch in depth has been drilled in 10 min. in recent practice, whereas a few years ago an inch in an hour was considered good work. At the Paterson plant holes for fishing have been punched cold without damage to the web of the rail. It has been found that manganese steel can be planed and heavy cuttings have been made by heating the surface to about 400 degrees C.

Apparently a manganese rail rusts faster during the first few weeks of exposure to the air than a Bessemer rail, though decisive tests on this point have not been reported. Scale accumulates on the surface of a manganese rail as it passes through the mill, and with the shrinkage of the metal in quenching the coating of scale is cleanly removed, thus exposing a fresh surface to the action of oxygen in the air. In view of the long life of the manganese rail the expense of coating with paint or oil is considered feasible if desired.

Open Hearth Furnace Practice.

While any considerable detail as to the practice of the Manganese Steel Rail Company is not available, it can be said that a large proportion of scrap can be employed in the open hearth furnace charge, and as high as 80 per cent. of scrap has been used. It has been found that the remelting of a charge consisting entirely of crops and other scrap of manganese steel gives a product possessing substantially the properties of manganese steel made from pig iron and carbon steel scrap, with ferromanganese additions. Various ways of introducing manganese have been experimented with and the character of the steel is found to be the same whether the ferromanganese be melted in a cupola and poured into

poured, as is apt to be the case, the metal in the center of the ingot may be liquid for some time, the result being a long tube filled with liquid steel. As the metal in this tube settles there will be a deep pipe if no measures are taken to prevent it. The absence of blowholes is ascribed to the fact that elements are present which are more energetic than iron in absorbing oxygen, the percentage of such reducing agents being put at 12.5, as compared



Figs. 3 and 4.—Piece of Manganese Steel Rail Rolled at Paterson, N. J., After Drop Test with Weight of 4750 Lb., Falling 40 Ft.

with 1.40 per cent. in carbon rail steel. It has been suggested that pipes may be avoided in manganese steel ingots by refilling from a batch of superheated metal separately provided for the purpose.

Physical Properties and Heat Treatment.

The heat treatment of manganese steel is the key to the desirable physical properties it has been found to possess. Tests have shown that the tensile strength of commercially rolled manganese steel will generally lie between 135,000 and 140,000 lb., elongation between 30 and 40 per cent. and elastic limit 60,000 to 70,000 lb. However, an elastic limit of 75,000 lb. has been reached, and in a few cases where chromium or some other metal has been added, it has been brought up to 85,000 lb. In general the elastic limit is from 50 to 55 per cent. of the ultimate strength. Rapid cooling through the critical range of temperature is necessary to secure the toughness characteristic of this product. Slow cooling in this range, between 1100 and 700 degrees C., results in rounded, imperfect crystallization due to the separation of certain compounds. In the earlier experiments in the rolling of manganese steel some ingots crushed in the blooming mill at points and along lines where no cracks existed. The greater part of the interior of such ingots

Rail Specifications.

In a paper before the Western Society of Engineers, Mr. Potter presented a tentative specification for manganese steel rails as follows:

Rails from any heat to withstand the standard drop test of the American Maintenance of Way Association.

Tensile Test Bars:

Cut cold from head, web and base of rail to give tensile strength above 100,000 lb., elastic limit above 55,000 lb., and elongation above 20 per cent.

Bending Test:

Flat strips cut from head, web or base of rail to bend 180 degrees around a diameter twice the thickness of specimen without evidence of failure and at temperature between ordinary atmospheric temperature and -80 degrees F. This will insure the toughness which determines wear value.

Manufacture:

Composition to be—	(Per cent.)
Manganese	10.00 to 13.00
Carbon	0.95 to 1.15
Silicon	0.20 to 0.40
Phosphorus	Under 0.10
Sulphur	Under 0.06

Ingots to be cast of weight sufficient to produce four 30-ft. rails from an ingot and in such a manner as to be free from pipes. Rails to be rolled and finished from ingots in not to exceed two heats, including the heat of casting.

Rails not to be reheated after rolling.



Fig. 5.—Manganese Steel Rails on a 7-Degree Curve at Analomink, Pa., on the Delaware, Lackawanna & Western Railroad.

had a granular or nodular structure, while the outer portions for a depth of 2 or 3 in. showed a columnar fracture. The failure in this case was due to improper heating.

A rolled shape of manganese steel is finished at a temperature higher than would be the case if a specimen of carbon steel were similarly heated, because the specific heat of manganese steel is considerably higher than that of carbon steel and its coefficient of conduction is very much lower. By Mr. Potter's process the steel is ductile while hot and can be rolled commercially, substantially under the conditions existing in the ordinary mill. The steel is not injured by burning or cracking, and a tough steel is secured, with fine crystalline structure and a higher elastic limit than when rolled and finished in any of the other ways tried in the inventor's long series of preliminary experiments. As manganese steel is readily burned when heated, and since this burning is difficult to avoid as the temperature is higher, it is usual to heat for quenching only to a point sufficiently high to give the characteristic toughness in the quenched metal. Where castings are reheated to a high temperature for toughening they are apt to be generally affected with deep cracks. To avoid the burning and cracking the reheating is generally stopped at about 1000 degrees C.

Finished rails to meet standards of American Maintenance of Way Association as to smoothness, dimensions of section, &c.

The more recent operations at Paterson have resulted in some modification of the original chemical composition. A better control of carbon has been possible, and the range of carbon to meet various forms of service is from 0.90 to 1.30 per cent. As high as 1.50 carbon steel has been made, but it proved too stiff for rolling. Silicon is now brought down to 0.20 per cent., as against 0.35 and 0.40 per cent. formerly. Lower silicon is found to give a more reliable product, but the differences due to variations in silicon are not as great as with carbon steels. By keeping phosphorus down to 0.05 to 0.06 per cent. a better product has been secured latterly, and in recent practice sulphur has run from 0.02 to 0.03 per cent.

Figs. 3 and 4 are views of a piece of 85-lb. manganese rail showing the effects of a drop test. The rail was laid on an ingot weighing 11,000 lb. and a ball weighing 4750 lb. was dropped three times from a height of 45 ft. on the rail head. The rail was then turned on its side and received one drop, and lastly it was turned with the head on the ingot and the flange up, receiving a fifth drop from the same height.

Manganese Steel Rails in Service.

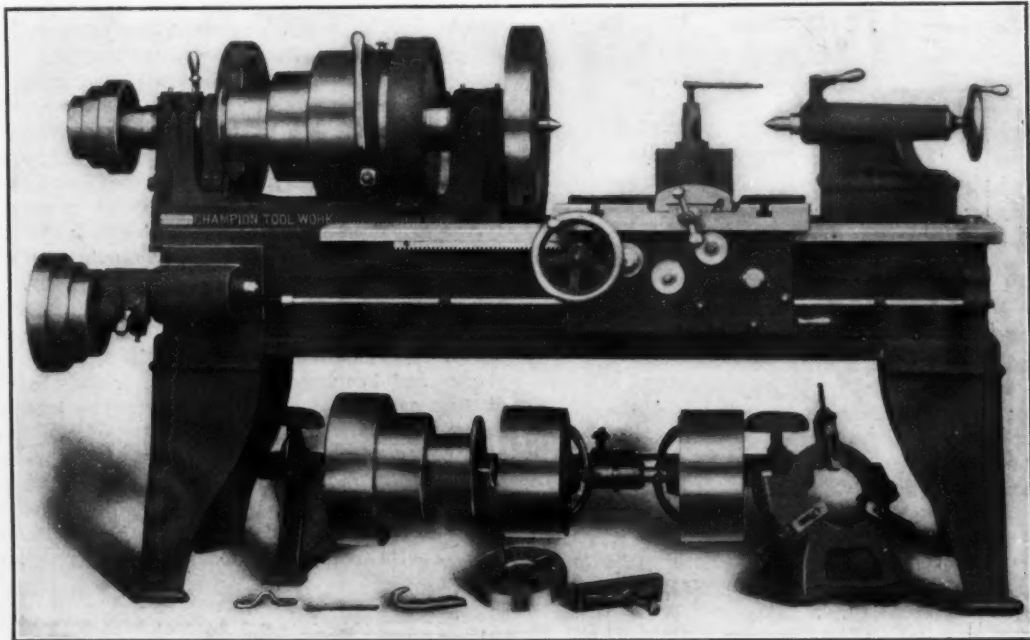
Fig. 5 shows a 7-degree curve at Analomink, Pa., on the Delaware, Lackawanna & Western Road, on which

rails rolled at Paterson were laid December 28, 1908. Among other lines on which these rails have been laid are the Northern Pacific, Erie, Delaware & Hudson, Central of New Jersey, Boston Elevated, New York Subway, Hudson & Manhattan, Baltimore & Ohio, Norfolk & Western, Ontario & Western, Atchison, Mexican Central and Chicago Belt Line. Service tests are insufficient thus far to give conclusive data for measuring the life of manganese steel rails. In general, it is stated that the Potter rails will last from four and a half to six times as long as high carbon open hearth rails. The price of the former is \$100 a ton and of the latter \$30 a ton. One feature of the comparisons of wear made thus far is that the loss of metal from rails in service does not go on at a uniform rate. In the case of manganese steel rails there is a marked deceleration in the latter part of a given period. In the first four months, in one case, the cross section of a manganese steel rail was reduced 0.05 sq. in. by wheel wear. At the end of the second four months period the total reduction in area of section was 0.10 sq. in.; at the end of the third four months period

A Champion Heavy 18-In. Lathe.

One of a number of extra heavy friction back geared 18-in. belt feed lathes recently built by the Champion Tool Works Company, Cincinnati, Ohio, on specifications for one of the large automobile plants is illustrated herewith. The frictions are of the toggle type having expansion rings $12\frac{3}{4}$ in. in diameter and $2\frac{1}{4}$ -in. face, actuated by the lever shown on the front of the headstock and moving a pinion engaging a bronze rack segment to throw the frictions in and out, so that heavy roughing cuts can be taken on the slow speed; with the reversing of the lever the change to high speed for the finishing cut may be made instantly without stopping the lathe.

The feed cones carry a $1\frac{1}{2}$ -in. belt. The lower cone is journaled on a swinging frame which can be raised or lowered by the handle shown, thereby acting as a belt tightener by increasing or decreasing the distance between the two feed cone centers. This is held in position by the screw shown on the lower side. A throwout clutch



An Extra Heavy Friction Back Geared 18-In. Lathe, Built for an Automobile Manufacturer by the Champion Tool Works Company, Cincinnati, Ohio.

0.13 sq. in., and at the end of the fourth 0.14 sq. in. In the case of high carbon open hearth, chrome nickel and Bessemer rails similar observations showed a regular rate of loss through three four months periods, and close to the same rate of loss for all three in the fourth period—a little more for the high carbon open hearth, a little less for the chrome nickel, and practically the same for the Bessemer rail.

The Dodge Mfg. Company's Great Plant.—That it now has the largest plant in the world for the manufacture of machinery for the mechanical transmission of power is the claim made by the Dodge Mfg. Company, Mishawaka, Ind. Its buildings cover nearly 40 acres in a 60-acre location on the Lake Shore & Michigan Southern Railroad. The consumption of raw materials, the production of finished goods and the capacities of the power and mechanical equipment are evidence of the extensiveness of the factory. It annually consumes 20,000 tons of pig iron, 7,000,000 ft. of lumber, 900 tons of steel and structural iron, 6200 tons of steel shafting and 9000 tons of coal. It annually produces 250,000 Independence wood split pulleys, 100,000 Dodge Standard iron split pulleys, 90,000 solid iron pulleys, 95,000 hangers, 150,000 bearings of all types, 4000 friction clutches, and more than 2,000,000 lb. of bearing metals. Its steam boilers have a capacity of 150 hp., and the steam engines 1500 hp., with electric generators of 250 kw. The steel shop in which the Eureka water softener and purifier is made has a capacity of 52 fully equipped machines per annum.

gear on the feed rod inside the box throws out the feed of the tool when running in either direction. The collars shown on the feed rod may be set at any position on the rod to engage stop pins on either end of the apron so as to stop the feed of the cut at any desired point. The feed can be reversed in the apron by the handle shown at the lower right hand corner of the apron.

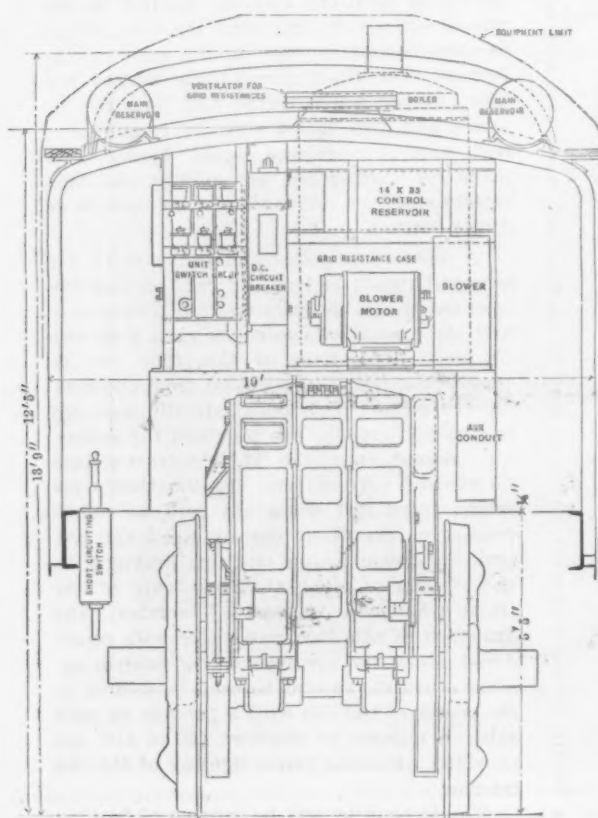
The lathe is designed essentially for rapid reduction work; its capacity may be judged somewhat from the following dimensions:

Swing over bed.....	10 $\frac{1}{2}$ in.
Swing over carriage bridge.....	13 $\frac{1}{4}$ in.
Maximum distance between centers (6 ft. lathe).....	24 in.
Hole through spindle.....	1 $\frac{1}{2}$ in.
Size of tools.....	$\frac{3}{8}$ x $1\frac{1}{4}$ in.
Cone pulley face for 4-in. belt.....	4 $\frac{1}{2}$ in.
Small step cone diameter.....	6 $\frac{1}{2}$ in.
Large step cone diameter.....	14 in.
Front spindle bearing diameter.....	3 7-16 in.
Front spindle bearing length.....	5 $\frac{1}{2}$ in.
Back spindle bearing diameter.....	2 $\frac{7}{8}$ in.
Back spindle bearing length.....	4 $\frac{1}{2}$ in.
Spindle nose diameter.....	2 $\frac{7}{8}$ in.
Spindle nose length.....	2 $\frac{1}{4}$ in.
Back gear ratio.....	12 to 1
Net weight of 18 in. by 6 ft. lathe.....	2,500 lb.

The headstock is $31\frac{1}{2}$ in. long, and is fastened to the bed by six screws and an additional clamp to the bed in front. The lathe is equipped with a heavy plain tool block having power cross feed. The countershaft pulleys are 12 x $5\frac{1}{2}$ in. for a 5-in. overhead belt, and have full 12-in. diameter rim frictions.

The N. Y., N. H. & H. Electric Freight Locomotive.

A powerful electric freight locomotive for use on the electrified section of the New York, New Haven & Hartford Railroad, between Stamford, Conn., and New York City, is now under construction, and will probably be ready for service in October. It has been designed primarily for handling fast freight service, but will also be used for hauling heavy passenger trains. The machine will be placed in regular operation as soon as completed, and given a thorough test in the freight service, with a view to eventually handling all of this class of work electrically. The mechanical parts of this locomotive were designed by the engineers of the Baldwin Locomotive Works and the mechanical department of the New York, New Haven & Hartford Railroad, and are being built at the Philadelphia works of the Baldwin Company. The



Transverse Sectional Elevation of the N. Y., N. H. & H. Electric Freight Locomotive.

electrical equipment is being furnished by the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.

The design includes features of special interest. The general plan of the trucks and running gear has been worked out in accordance with a patent granted to S. M. Vauclain July 6, 1909. This patent describes an articulated locomotive in which the truck frames are connected by an intermediate draw bar. One truck has only a rotative motion about its center pin, while the other has a fore-and-aft as well as a rotative motion to compensate for the angular positions of the trucks and draw bar when the locomotive is traversing curves. The tractive force is transmitted through the truck frames and draw bar, instead of through the main frame.

In the present instance the 2-4-4-2 wheel arrangement has been adopted. Each truck has two pairs of driving wheels and a single pair of leading wheels. The driving wheels are held in alignment by cast steel bar frames, similar to those usually used in steam locomotive practice. The frames are placed outside the wheels, and are braced transversely under the center of the locomotive by heavy steel castings provided with draw pockets in which the intermediate draw bar is seated. This bar transmits from one truck frame to the other the full tractive force developed by the motors of the leading truck.

Train connections are effected by two radial draw bars, one of which is placed at each end of the locomotive. The draw bars are pinned to cast steel cross ties, which brace the truck frames between the driving and leading wheels. The latter are mounted in radial swing trucks of the Rushton type. The radius bars for those trucks are pivoted to the same cross ties as the main draw bars.

The wheel loads are equalized as in steam locomotive practice, the springs of the leading wheels being connected to the driving springs by equalizing beams. One of the trucks is cross-equalized under the center of the locomotive. The frame is spring-supported by the cross-equalizer, on each side of the center line. This arrangement should promote steady riding, and tends to prevent side-rolling at high speed.

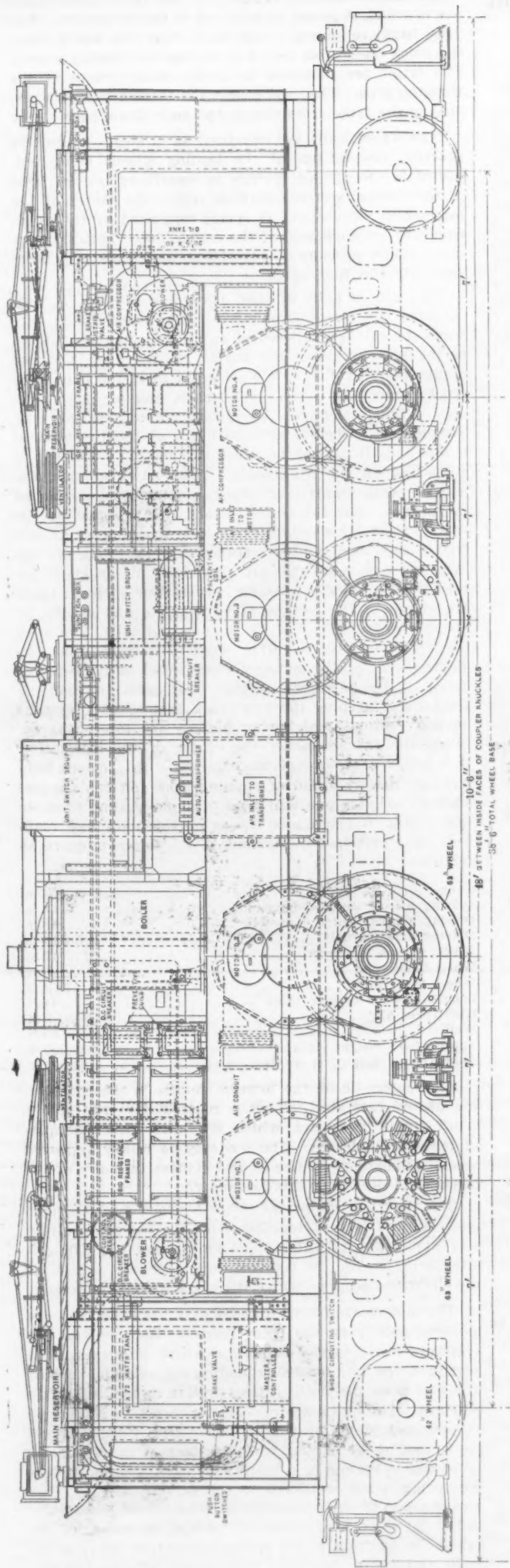
The cab is built of steel plate and is 43½ ft. long, covering the entire locomotive. The frame which supports the cab is composed of two 12-in. channels, united at the ends by plates and angles. This frame is braced transversely by five cast steel cross ties; one over each truck center pin, one at mid length, and one near each end of the locomotive. The truck center pins carry no weight and, as before explained, one of them is allowed a fore-and-aft as well as a rotative motion. The cab is supported on the intermediate and end cross ties, the weight being transferred through coiled springs placed in pockets. The cab frame is held in alignment by the truck center pins, while the lower spring pockets are free to slide over the truck frame cross ties. The springs over the end cross ties are placed 30 in. apart, transversely. The middle cross tie carries four springs; these are placed at the corners of a rectangle and are 84 in. apart, transversely, and 53 in. longitudinally. As both the trucks are free to rotate about their center pins, the displacement of the spring pockets, even on a 20-degree curve, is comparatively slight. To assist in reducing shocks and keeping the two truck frames in alignment chafing castings and spring buffers are interposed between the frames, under the center of the locomotive. It is believed, from experience gained with previous locomotives, that the plan of running gear and cab support adopted for this one will tend to avoid nosing, promote easy riding and minimize shocks on the track and road-bed. The principal dimensions of the locomotive are as follows:

Gauge	4 ft. 8½ in.
Driving wheels, outside diameter.....	63 in.
Driving wheels, center diameter.....	56 in.
Driving axle journals.....	8 x 13 in.
Truck wheels, diameter.....	42 in.
Wheel base, rigid.....	7 ft.
Wheel base, total.....	38½ ft.
Length between coupler faces.....	48 ft.
Height over all.....	13 ft. 0 in.
Width	10 ft.
Approximate weight, total.....	260,000 lb.
Approximate weight, on driving wheels.....	188,000 lb.

Characteristic of the heavier details is the considerable use of cast steel. This is particularly true of the truck frame cross ties, which are interesting examples of mechanical design. The tendency to follow approved steam locomotive practice is also evident in many of the mechanical details of this locomotive.

The electrical equipment comprises four 350-hp. single-phase geared motors, together with the necessary auxiliary apparatus for their operation from the 11,000-volt alternating current or 600-volt direct current circuits of the electrified sections which the locomotive will traverse.

The motors are placed directly over the axles, and are mounted solidly on the truck frames. Each end of the armature shaft carries a pinion, which meshes with a gear mounted on a quill surrounding the axle and carried in bearings on the motor frame, similar to the usual axle bearings. The quills are provided with six driving arms on each end, which project into spaces provided between the spokes in the driving wheels. Each of these arms is connected to an end of a helical spring, the other end of the spring being connected to the driving wheel. This arrangement of drive smooths out the torque pulsations, and at the same time allows for vertical movement of the axles. In addition to the spring connection between the quills and drives, flexibility is provided between the pin-



Side Sectional Elevation of the 1200-Hp. Electric Freight Locomotive Now Being Built for the New York, New Haven & Hartford Railroad.

ions and motor shaft, to equalize the torque on the gears. The quills are of large diameter permitting unrestricted motion of the wheels and axles. The center of gravity of the motors, as well as that of the entire locomotive, is high, avoiding the transmission of strains and shocks from the track and road-bed to the motors.

The motors have 12 poles built into a solid frame and are designed for forced ventilation. When operating on 25-cycle alternating current with forced ventilation each of the four motors will carry continuously a load of 300 hp. An air-blast transformer is provided for lowering the trolley line voltage to that required by the motors. The control apparatus is of the Westinghouse electro-pneumatic type. When operating on alternating current all four motors are connected in multiple and the control is obtained entirely by changing the connections to various voltage taps on the main transformer. On direct current the motors are first grouped all in series, and then two in series and two in parallel, in combination with various resistance steps. Provision is made for cutting out any one of the four motors singly on either alternating current or direct current.

A master controller and brake valve are located in each end of the cab, so that the locomotive can be operated from either end, and the system of control is such that two or more locomotives of this type can be coupled together and operated from one master controller. Two pneumatically operated pantograph trolleys are provided for collecting current from the 11,000-volt overhead alternating current line. Pneumatically operated third rail shoes are used to collect current on the direct current third rail section. A steam heater outfit is provided on the locomotive for heating the cars of the trains when used in passenger service. The drawings of this locomotive, herewith reproduced, show the arrangement of control apparatus which, as will be seen, is located in the center of the cab with a passage on each side. A number of windows (20 in all) are provided, affording ample lighting of the cab interior.

The locomotive will be capable of hauling a freight train having a maximum weight of 1500 tons, at a speed of 35 miles per hour. When used in passenger service 800-ton trains will be hauled at a maximum speed of 45 miles per hour.

When Factory Accidents Usually Occur.—The Indiana State Factory Inspector, in going over his accident records for data to be submitted to the Federal Government, observed that practically all the serious accidents occurred within 30 min. after the opening of the factories, within an hour of shutting down for noon, or within 2 hr. of quitting time at night. He attributes the first to the longer chances taken by the machinist when fresh from rest and full of energy for the day's work, and ascribes the other two to the weariness of the employee following close application to his work, with the strain on the eye and the nervous system and sometimes to befuddled sense traceable to improper ventilation. In the face of this the inspector says that the Department has almost a constant fight to maintain the noon resting time at 1 hr., as against the petitions of workmen to cut it down to a half hour and even to 20 min.

Cincinnati Automatic Gear Cutting Machines.

The securing of rigidity, large wearing surfaces and simplicity of parts were the principal ends in view when the Nos. 3 and 3A automatic spur gear cutting machines were designed by the Cincinnati Gear Cutting Machine Company, Cincinnati, Ohio. The respective capacities of the machines are 26 in. diameter by 10 in. face, and 36 in. diameter by 10 in. face, gears or stacks of gears. The two sides of the machine are shown in the accompanying illustration. The power is transmitted, as may be seen in Fig. 2, from a single pulley running at constant speed, and the various speeds and feeds are obtained by transposing gears conveniently located. All gibs are of the taper type, adjustable from the ends. All shafts and spindles are accurately ground and are journaled in bronze bushings. The movements are all automatic, each being dependent on the preceding one, and arranged so that it cannot take place until that one has been completed.

The work saddle is gibbed to the housing and the

the slide by hand, and at G is a safety stop for the feed when adjusting the saddle by the hand wheel. The cutter slide returns at a constant speed, regardless of the rate of feed. There are 12 changes of feed.

The cutter spindle is of large diameter and is accurately ground. It has easily accessible means for taking up wear. The spindle has both a taper and a straight bearing, and is journaled in a bronze bearing that is adjustable endwise for centering the cutter. Fig. 4 shows the cutter spindle assembled in its bearing, together with the worm wheel, and also shows detached the worm, collar, cutter spindle proper, cutter arbor and rod for drawing the arbor into the cutter spindle.

The drive is through a worm and wheel with means for taking up end thrust wear of the worm. The cutter end of the spindle is provided with a taper hole for receiving the cutter arbor. This arbor is keyed in the spindle and is drawn in and forced out by a threaded bolt. A removable bearing is provided for supporting the outer end of the cutter arbor. Six changes of speed are provided for the cutter spindle.

The indexing mechanism is of simple construction. It is claimed that there are fewer gears in this index train

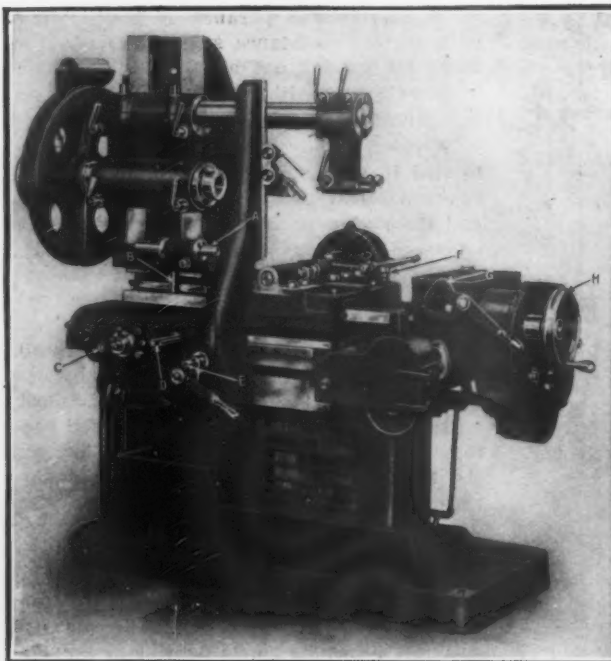


Fig. 1.

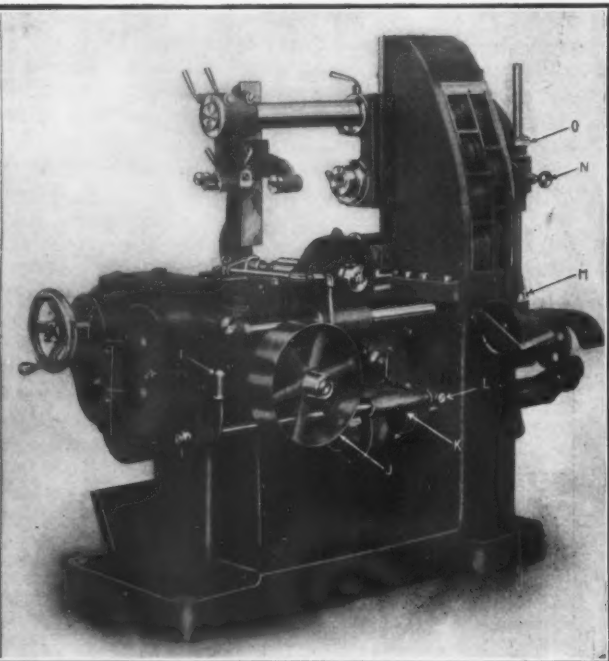


Fig. 2.

Two Views of the No. 3-A Automatic Gear Cutting Machine Built by the Cincinnati Gear Cutting Machine Company, Cincinnati, Ohio.

work arbor and blanks do not drop out of parallelism when the clamps are loosened for adjusting the work for the tooth depth. The work arbor saddle has a long rectangular guide with an endwise adjustable gib. The screw for raising and lowering the saddle, shown at B in Fig. 1, is operated from the front of the machine by a crank applied to the squared shaft C. It has a micrometer collar calibrated to 0.001 in. The work spindle, of steel, is accurately ground and journaled in bronze bushes and has provision for taking up wear. The arbor is drawn in and forced out by a threaded shaft and hand wheel not shown.

The cutter slide has rectangular guiding surfaces with long taper gibs, for taking up wear, both vertically and horizontally. Fig. 3 is an inverted view of the cutter saddle, which shows plainly the full length taper gibbing. The length of the guiding surface is 4.57 times its width, thus reducing any binding action. The slide is fed forward and retracted by a screw. The dogs, for adjusting the length of feed of the cutter slide, are operated by a crank wrench from the front of the bed at D (Fig. 1). A retractable tappet, F, for the adjustable dogs, is provided so that the slide can be run to the extreme back position for removing blanks without disturbing the setting of the dogs. An automatic disengaging crank wheel, H (Fig. 1), is provided to move

than in that of any other machine on the market. The worm can be disengaged from the wheel quickly and brought back into the exact meshing depth, or the worm can be disengaged from the index gears and rotated any desired amount for resetting work, and again secured to the index gear. A take-up for end play of the index worm is provided at O (Fig. 2), and at N is a gauge giving the proper mesh of the worm. Loosening one screw permits the withdrawal of the worm from the worm gear, the shaft pivoting below, and it can be returned to the same position as before. A coupling is provided in the shaft at M to permit rotation of the worm or the index wheel independently of the indexing

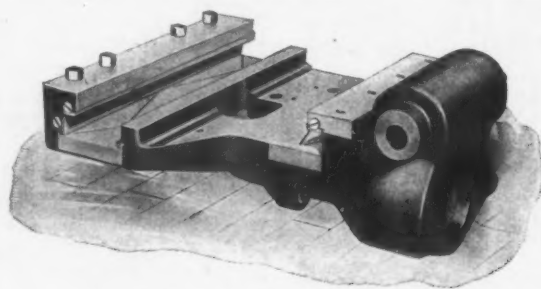


Fig. 3.—A View of the Cutter Saddle Inverted.

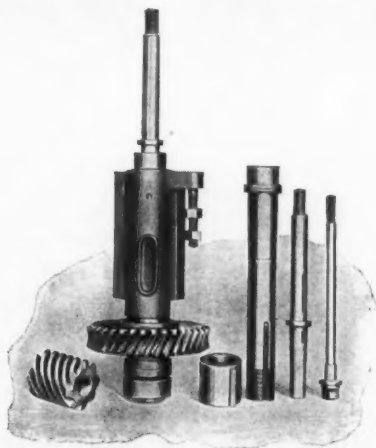


Fig. 4.—The Cutter Spindle Assembled and Unassembled.

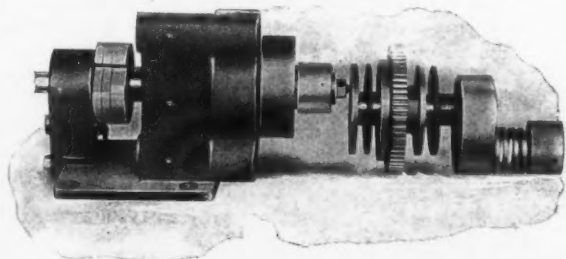


Fig. 5.—The Friction Stop Disk Assembled and Unassembled.

mechanism. A regulating lever controlling the turns of the index shaft is shown at L. The indexing mechanism is so interlocked with the cutter slide feed that it is impossible for the cutter to advance until the work is properly indexed, or when the cutter is feeding to index, thus making it impossible to spoil work. The work spindle can be made to space once or revolve continuously by a hand movement under the control of the operator. The hand indexing lever is shown at I (Fig. 2). The drop forged stop for the index disk and pawl are shown at K. The friction operating the disk stop J is simple and accessible, and it is not necessary to dismantle any part of the machine to adjust it; a minute's use of a spanner wrench accomplishes the work. Fig. 5 shows the friction stop disk assembled and unassembled, giving a very good idea of its simplicity.

Index change gears are furnished to cut all teeth from 12 to 100, and, with the exception of prime numbers and their multiples, from 100 to 450. Special gears for cutting other numbers of teeth can be furnished. On the top of the index worm wheel (Fig. 1) may be seen a pocket for a dry battery, which is used to ring an electric bell when the cutting of a gear or stack of gears is completed. Both overhead and outer supports for the work arbor, and a rim support, A, for the gear blanks are furnished. The outer support is adjusted from or toward the work spindle by a pinion wrench, F (Fig. 1). The machine is regularly equipped with a countershaft, though, if desired, will be furnished with tight and loose pulleys mounted on the initial shaft. It may also be had arranged for motor drive if desired.

Canadian Industrial Developments.

TORONTO, September 24, 1909.—A. Grondwall of Ludvika, Sweden, one of the three Swedish engineers who have been developing the electric melting process along the lines laid down by Dr. Haanel, Director of Mines for Canada, recently came to Ottawa to assist in projects for establishing works for the electric smelting of iron ores. Since his arrival Dr. Haanel has let it be known that arrangements are being made for putting up a plant of the kind in connection with the iron and steel industries at Sault Ste. Marie. The Lake Superior Corporation is, it is understood, considering the question of building a number of furnaces of the new Swedish type. Louis Simpson, formerly connected with the cotton industry, is giving energetic attention to the business of forming a company to carry on electric smelting at the

Chats, a power site on the Ottawa River about 30 miles west of the capital. This undertaking is to be on a large scale, an expenditure of several millions being contemplated.

E. D. Warren of this city has returned from a visit of inspection at the works of the Lake Superior Corporation, of which he is president. He says that the improvements are proceeding according to plan and that the blast furnace that is to be added to the plant is expected to be ready for operation by the end of next July. He reports considerable business in sight.

The ratepayers of Chippewa, near Niagara Falls, have ratified a by-law providing for certain concessions to the Electrical Furnace Products Company of Pittsburgh. The concessions consist of tax exemption for 10 years and a fixed assessment of \$25,000 for a further 10 years. The company has purchased 19 acres of land and is to erect a \$50,000 plant in Chippewa for the manufacture of structural steel. The works are to be in operation by next spring, 60 hands to be employed at the outset.

F. W. Thompson, vice-president of the Ogilvie Flour Mills Company, and H. S. Holt, president of the Montreal Heat, Light & Power Company, have been in consultation with city officials in Fort William on the subject of establishing a rolling mill and wire plant in that city. Exemption from taxation is one of the inducements sought.

Writing as agent for the Irondale Steel Company, Irondale, Wash., and avowedly under instructions by James A. Moore, president of that company, Gibson Arnoldi put himself in communication with the Mayor and Aldermen of Vancouver. In his letter, dated the 17th inst., he said that it is the intention of the company to locate at some point in British Columbia an iron and steel plant like that at Irondale. He expressed a desire to know what Vancouver would be prepared to do in the way of granting a site, harbor facilities, tax exemption, free water and a bonus.

British Steel for British Columbia.

Even in the face of high duties, British manufacturers of products are able to place business in the westernmost part of Canada. Steel cargoes coming by way of the Suez Canal are arriving in British Columbia ports. Some days ago a vessel arrived in Vancouver with rails from Great Britain for the Pemberton Valley & Northern Railway Company. Other vessels will follow in their turn with their several loads of rails for the same contract.

An order for 55,000 ft. of welded steel tubes has just been given by the Esquimault Water Works Company of Victoria, B. C., to the British Welding Company of London, England. Delivery is to be begun next March, and the whole quantity of the pipe is to be laid down in Victoria by June 1. The pipes are to be made of steel 5-16 in. thick, and the largest are to be 2 ft. 6 in. in diameter. It is to be made at the company's works in Mother, Scotland.

The Quest for Iron Ore in Ontario.

Prospecting for iron ore has become very active in the part of Ontario beyond Lake Superior. According to J. W. Morgan, the Government Mining Recorder at Port Arthur, interest in iron has taken a sudden start. North of Sturgeon Lake and east of Lake Nipigon many prospectors are in the field and numerous claims have been taken up. He says also that the development work going on in the district is twice as much as was in progress last fall. That is partly a consequence of the change in the law requiring actual work to be done on a claim as a condition to its being held.

The branch line of the Grand Trunk Pacific Railway between Fort William and the point named, Superior Junction, on the main line of the National Transcontinental, is now in operation throughout a considerable part of its 205 miles. The country it traverses is largely of a mineral character. The first shipment of ore over the new line was a 20-car train load from the Northern Pyrites mine. The owners of this mine have an order to deliver 30,000 tons of the ore at Cleveland, where it is to be used in a chemical establishment for the manufacture of sulphuric acid.

C. A. C. J.

The Gorton No. 2-B Cutting-Off Machine.

The latest in heavy duty cutting-off machines brought out by the George Gorton Machine Company, Racine, Wis., is the No. 2-B, which is designed for constant hard service on 6 in. rounds or $1\frac{1}{2}$ to $5\frac{1}{2}$ in. squares. For occasional cuts it may even be used on work as large as 8-in. rounds, the additional diameter capacity being obtained by back feeding 2 in. by hand. Even under these conditions it is claimed that an 8-in. bar may be severed in less time than is possible on any other type of cutting-off machine. This machine is a development which has been in progress for several years. One of the earlier types made by this company was described in *The Iron Age* March 5, 1908. Since that machine was designed several improvements have been made which are incorporated in the machine shown in Fig. 1. Particular attention has been given to means of oiling, and in making the tool thoroughly strong throughout so that it may be capable of continuous hard service. It is

The method of driving the cutter blade produces a machine which is many times more efficient than any other design of machine can possibly be, according to the contention of the builder. In the view of the main driving gear with the cutter blade attached given in Fig. 2, particular attention is called to the large diameter of this main driving gear, and the fact that there is but one joint between the source of power and the actual cutter teeth, and that joint being the contact of the driving pinion with this main gear, which also accounts largely for the great efficiency of the machine. The blade is securely fastened entirely around its periphery, which is the strongest portion of the blade, instead of merely at the weak center point as in an ordinary cut-off saw. By reason of this rigid mounting it is impossible for the blade to snake or deflect in any manner from its true position. The inserted cutters being placed in the internal bore instead of on the periphery it is possible to key them much more firmly without likelihood of springing the blade, and the cutters may be thoroughly secured without risk of becoming loose or flying from

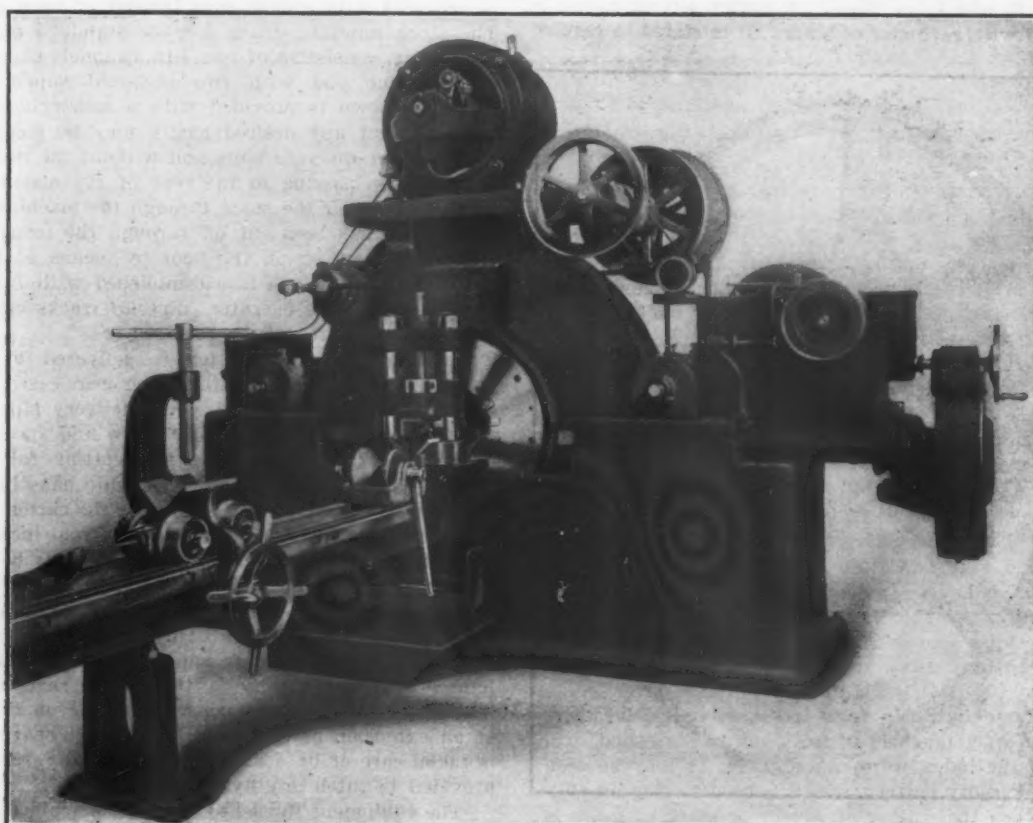


Fig. 1.—The No. 2-B Motor Driven Cutting-Off Machine Built by the George Gorton Machine Company, Racine, Wis.

offered as one especially adapted for such work as is met with in rolling mills, car and locomotive works, navy yards, &c.

By virtue of the construction employed it is possible to drive the cutting teeth at both speeds and feeds that were heretofore unobtainable, and when operating to its maximum capacity, as for instance when severing a 6 in. ordinary round steel bar in a trifle under one minute, it is claimed that there is absolutely no chatter or vibration. Such a working speed as that just mentioned, while possible, is not practicable for regular maintenance on account of the present tool steels. When the high duty steels are improved, as they probably will be, this machine will be capable of driving them to their fullest capacity. It is stated that were there tools available the machine would sever an ordinary 6-in. round steel bar in 30 seconds, it having been designed with the expectation of ultimately obtaining that result.

The bed and cutter head are exceedingly massive. In a tool of this character chatter and vibration are the two principal annoyances, and when these troubles are occasioned through poor driving mechanism and machines of light weight, they are entirely beyond control.

their pockets. There are fewer cutters in this than in the ordinary saw blade, and they will become dulled in one-third the time that three times the number would require, but as they may be changed in about one-third the time usually required, it is maintained that this is no disadvantage. The cutting edges, however, last longer in a machine which is devoid of vibration, hence it is declared that cutters of a given quality in this machine will retain their cutting edges longer than in a machine subject to vibration.

Attention is particularly called to the massive bed containing the exceptionally heavy and rigid drum bearing, and the 60-in. main driving gear, which is driven with but one pinion forged integral with its 3-in. crucible steel shaft. Mounted upon this main pinion shaft direct is either a clutch pulley for the belt driven machine or a clutch gear for the electrically driven machine. The entire absence of driving gears or mechanism with the necessary looseness in the gear teeth and various bearings and the usual torsional deflection adds largely to the efficiency of the tool.

The base is a single casting weighing slightly over 5000 lb., heavily ribbed internally, and having the upper

portion of each side cored out in box section making an exceptionally stiff, rigid casting. The bottom is cast solid, forming a reservoir for lubricant. The lower cutter drum slide is also a heavy single piece casting (weight 2400 lb.), and having in its lower portion a semi-circular reservoir for the oil supply lubricating the cutter drum bearings. Bolted to the cutter drum slide with four 1 $\frac{3}{4}$ -in. steel bolts is the cutter drum cap, a single casting weighing 1375 lb., containing at the top motor bracket legs and bored at the left to take main driving pinion bearings which are clamped in position and readily removed.

The cutter drum shown in Fig. 2 is made of fine grain metal, 25 per cent. steel, and contains 10 hardened and ground $\frac{3}{4}$ -in. steel studs, over which the cutter blade fits. The cutter blade is made of 0.6 per cent. carbon steel, machined for the cutter tooth pockets and reamed to push lightly over the steel studs in the saw drum, and is secured with 10 $\frac{3}{8}$ -in. special screws. All thicknesses of blades are interchangeable between different machines, and are readily removed when necessary. The standard blades carried in stock for this size of machine are 7-16, $\frac{3}{8}$ and $\frac{1}{4}$ in. thick. A cutter setting gauge is furnished with each size of blade. It is stated to require

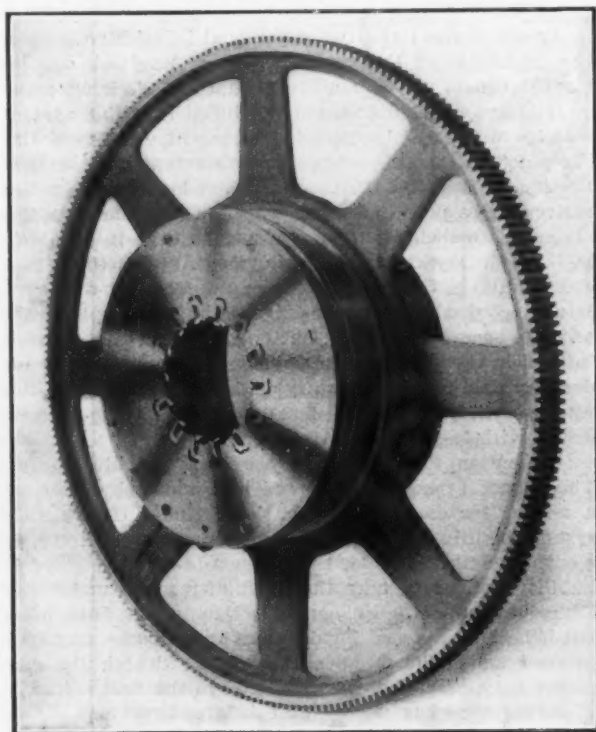


Fig. 2.—The Main Driving Gear with the Cutter Drum and Blade Complete.

less than one minute to remove a broken cutter from the blade and replace it with a new sharp one. The breakage of a cutter in use does not injure the blade.

The main driving gear before mentioned is of a special tough mixture, 25 per cent. steel, and meshes with the 5-in. driving pinion, which is a crucible steel forging integral with its shaft. The angle of the drive is such that comparatively little pressure is placed on the cutter drum bearing. Secured to the rear end of the pinion is the main driving clutch. The expansion ring is 14 in. in diameter by 3 in. face, and is thoroughly lubricated on its friction surface. It is expanded by a cone with an adjustable roller operating on it and connected to a steel yoke. The cone is operated with a rod passing through the main driving pinion shaft, which is hollow, and is attached to the lever shown at the front side of the machine over the stock vise in Fig. 1. The front cover of the clutch drum is removable, and in it is inserted about 1 gal. of oil. On motor driven machines the motor is allowed to run constantly, and the machine is started and stopped with this clutch. The main driving clutch pulley 30 in. in diameter by 6 $\frac{1}{2}$ in. face is intended to run at about 350 rev. per min., which will drive the cutter teeth at the rate of 76 ft. per minute, a speed well suited

to all ordinary grades of steel with 20 to 25 per cent. carbon. When the machines are electrically driven this pulley may be connected to the motor with an endless leather belt or a gear may be substituted and connection made with silent chain drive. A 20-hp. motor is furnished for the standard motor driven machine, running at 800 rev. per min.

The feed works are driven by a seven-step cone pulley, giving rates of feed of from 6 in. in one minute to 6 in. in four minutes. The lower cone pulley is connected to the gear box containing the forward and quick return feed clutches, operated either by hand or automatically with a positive knockout at the extremes of the stroke, adjustment being provided for various diameters of stock. All bearings in the gear box are submerged in oil.

Each machine is provided with a powerful clamping vise having hardened tool steel jaws. The two side studs in this vise are 2 $\frac{1}{2}$ in. diameter. The vise will clamp 1 $\frac{1}{2}$ to 8 in. rounds and 1 $\frac{1}{2}$ to 5 $\frac{1}{2}$ in. square stock, and is sufficiently powerful to permit the operator placing a pressure of 25,000 lb. on the bar being operated upon. The stock handling trolley is provided with grease cups instead of open oil holes. The stock handling track for the standard machine is 22 ft. long, consisting of two 7-in. channels supported on the machine and with two outboard supports. The carriage shown is provided with a measuring arrangement so that any desired length may be measured off with positive distance bolts and without the necessity of the operator passing to the rear of the machine. The idea is to deliver the stock through the machine, forcing that which has been cut off through the trough at the rear to a truck or on the floor by means of the stock carriage, all of which is accomplished with little effort on the part of the operator. Special tracks can be furnished 32 or 42 ft. long if required.

Lubricant for the cutter is delivered by a gear pump shown on the top of the upper gear case. It has a screened suction, check valve and delivery pipe containing a release valve, regulating valve and special water delivery nozzle. The chips when cutting fall on chip screens which are contained in the chip pans in the side openings on the base; thus separating the cutter lubricant from the chips. The latter are raked from these screens into a floor pan, free from lubricant, and may be shoveled into trucks from the floor pan.

In addition to the unusual precautions taken to make the lubrication sufficient, all thrusts are taken with ball thrust bearings. The only important bearing that is not lubricated automatically is the clutch gear or pulley, which is lumen bronze bushed, operating on the outside of an extension of the rear main pinion bearing. This is taken care of by a sight feed oiler, oil catchers being provided to catch any flying oil.

The equipment furnished with the machine includes a cutter blade, three additional narrow cutters, three additional wide cutters, cutter setting gauge, cutter drift, cutter setting wrench, steel vise bar, socket wrench, steel wrench, two inside chip pans, two chip screens, two floor chip pans, six stock shields, two oil pocket weights, two oil pocket filtering pads, two oil pocket covers, cover for the upper gear case, chip rake, gauge stop for stock rack, sample measuring bolt for gauge stop and a standard 22-in. stock carriage complete. The net weight of the belt driven machine, including the 22-in. stock rack, is 16,700 lb. The height of the machine over all is 6 ft. 10 in., the width 4 ft. 9 in., and the length 11 ft. 3 in.

The American Peat Society held its third annual meeting at the Massachusetts Institute of Technology, room 11, Engineering Building 3, Boston, September 23, 24 and 25. Papers were presented by practical peat men describing the peat plants in operation and the various experiments made in all parts of this country and Europe. This will demonstrate the present state of the peat industry. The great and burdensome pioneer work has been done, it is claimed, and it now rests with the rank and file to fall in line and assist in establishing a flourishing American peat industry. Julius Bordollo, Kingsbridge, New York, is the secretary and treasurer of the society.

Compensation to Workmen for Accidental Injuries.*

BY M. M. DUNCAN.

I desire to call your attention briefly to the urgent necessity for a change in the laws governing personal injuries. At present workmen have no protection or remedy for accidental injuries. Employers are only liable for negligent injuries; that is, such as from the neglect on the part of the employer of some duty the law imposes upon him. This leaves out of consideration all injuries growing out of the momentary thoughtlessness or carelessness of the employee or of his fellow workmen. A large proportion, estimated as high as 75 per cent., of all the injuries received by workmen in this State are due to causes for which the employer is not legally liable. The entire burden growing out of such accidents is thus placed upon the injured family, except as relieved by charitable or philanthropic contributions on the part of the employer.

Present System Unjust.

As civilization advances and human needs increase, we find that the hazards incurred by the workman become greater. This is noticeable in every industry. The construction of skyscrapers in the cities, of great bridges and tunnels, the operation of enormous furnaces and steel plants, of deeper mines, the application of electricity and the ever increasing volume of traffic on our railroads, present more numerous and greater hazards than were known to the workman of 25 years ago. The effect of this is shown in the great number of accidental deaths and injuries constantly occurring.

Public sentiment demands and public policy requires the adoption of laws which will give employees adequate compensation in case of accidental injuries, as well as for those which I have called negligent injuries. Our present system is unjust from an economic standpoint and has been discarded in every industrial country in the world except our own and Canada. Under our form of government Federal laws governing this question, except possibly as applied to interstate commerce, are not constitutional and therefore each State must act independently. Up to this time nothing has been done, except that some States have enacted laws removing or modifying certain legal defenses which were heretofore available against employees in personal injury suits.

This has not proved to be a satisfactory way of helping injured workmen or their families. On the contrary, it seems rather to be a system devised to help energetic and unscrupulous lawyers. In such States a class of practitioners has grown up to prey upon both the injured employee and the employer. They demand from the injured workman or his family a large compensation, usually one-half, of all that is recovered, for their alleged legal services, and on the other hand they seek by every means, often not hesitating at fraud or perjury, to secure large verdicts against the employer regardless of the merits of the case. Such a system is thoroughly bad, legally and morally. It creates distrust of the courts and constant irritation between employer and employee.

Employers of labor are beginning to understand the economic value of human life, and the importance from a business standpoint of protecting and caring for their employees. This is shown by the adoption of new appliances and safeguards to prevent injuries. It is shown in the erection of clubrooms, libraries, and in the maintenance of hospitals and the employment of nurses and physicians. But it is time to go a step farther and make each industry provide suitable compensation to the injured workman, and to his family in case of his death, and to do this in a way which will insure their getting it, also promoting better relations between the workman and his employer.

The Public Involved.

This question is a public one, whether we would have it so or not. The care of orphan children and indigent

relatives is an expense borne by the State. The maintenance of courts, the payment of judges, jurors and court officials engaged in the trial of these cases is met by general taxation. And finally, the general welfare of the laboring class is intimately related to the best interests of the State.

I will not attempt to do more than to suggest a remedy. I think that in order to enact laws which will be just to both employer and employee, a careful investigation should be made of the systems adopted in other great industrial countries, and the results obtained therefrom, as well as the collection of data in respect to accidents, and the various methods of dealing with them in this country.

At the last session of the Minnesota Legislature a commission was created to make such an investigation and submit a written report with its recommendations to the Legislature of 1911. Its members serve without pay, but an appropriation of \$5000 was made to cover their expenses. It is interesting to note that this commission was created at the request of representatives of both employers and employees. This is unquestionably a step in the right direction, and our own State of Michigan might well follow its example.

English Employers' Liability and Compensation Laws.

In our States liability for personal injuries rests upon the principles of the common law of England, supplemented somewhat by statutes and court decisions; yet as long ago as 1880 England concluded that this system was insufficient and adopted a stringent employers' liability act. Even this proved unsatisfactory, and in 1897 Parliament adopted the Compensation law, based on the entirely new principle that every business must make measured compensation to workmen injured in any way in the ordinary course of employment, unless there was gross fault on the part of the employee. The workman is not required to prove negligence in the employer in order to secure indemnity, but only the fact that he was injured in the course of employment. The amount of indemnity paid in case of injury or death is based upon the wages earned, and ranges from \$750 to \$1500 in case of death, with lesser amount for injuries.

I mention these rates only by way of illustration. The proper rates to be adopted here must obviously be a matter for careful investigation. Under the English system the injured workmen may choose whether to bring a suit for damages under the common law and employers' liability act, or to take the indemnity given under the Compensation act. He cannot collect under both acts, but if he brings a suit for damages and fails he may still proceed under the Compensation act, although the employer may offset the costs incurred in the first suit.

Experience has shown that injured workmen much prefer the Compensation law. They obtain their indemnity without the delay and expense incident to litigation and without any controversy with their employers.

Compensation for Employees, Not Punishment of Employers.

Whether it is desirable for us to adopt the English system, or some modification of that and the German system, I will not here stop to discuss, but I wish to emphasize the point that compensation to the employee, rather than punishment of the employer, is the correct basis for whatever system is adopted. I know that the large employers of labor are earnestly striving to protect and safeguard their employees from injuries. The theory of negligence upon which verdicts are rendered is in most cases a mere legal fiction. Juries act upon sympathetic motives rather than because of any conviction that the employer has been really negligent. In fact, I think that the average juror takes this method of showing his disapproval of our entire system, through which only a small proportion of injured men get any redress whatever. But in spite of all precautions, accidents and even deaths are unavoidable in every industry. The principle of compensation is that each industry shall pay in such cases some just and adequate amount, not as damages collected from some alleged negligent employer, but as a method of fairly distributing the extraordinary risks of civilization. Such payments become a part of the cost

* Presidential address before the Lake Superior Mining Institute, August 25, 1909. Mr. Duncan is general manager of the Cleveland-Cliffs Iron Company, Ishpeming, Mich.

of production, like expenditures for broken down or worn out machinery, and if required by law, so as to place all producers on the same basis, would not be detrimental to the employer.

The German Benefits Scheme.

In Germany this result is accomplished by a system of industrial insurance. This system has been so developed as to include not only accidents, but sickness and old age pensions. Accident insurance is compulsory for all workmen and foremen earning less than \$720 per year. The premiums are paid entirely by the employer, and are collected in assessments based upon the wages paid and the scale of risk in the business. Insurance is carried in associations of employers regulated by the government, and these associations insure those in the same or similar trades, thus practically placing each industry by itself. The benefits paid during disability or after death to dependent relatives are based upon the scale of wages. The death benefit is an amount 20 times the daily wages and a pension to dependent relatives up to 60 per cent. of the daily wages. The benefits during disability range up to two-thirds of the annual earnings, or free hospital treatment with a pension to dependent relatives up to 60 per cent. of earnings.

These benefits, though small, are paid without any litigation over questions of negligence, and in case of controversy the dispute is settled without expense to the parties by an arbitration court. Under this system there was paid in 1906 the sum of \$34,368,000 to 354,680 injured and to 73,999 widows, 103,564 children and 3882 parents of those killed. Yet this result was accomplished at an average cost of only \$2.18 per insured. These associations covered 19,200,000 workmen, and the premiums collected amounted to \$40,080,000.

If we compare the German system with our own method of casualty insurance the contrast is startling. It was recently estimated by a careful and painstaking writer that not over 35 cents of each dollar paid as premiums to casualty companies ever reaches the injured employee or his family. The balance is absorbed in fixed charges, operating expenses, attorney fees and the payment of dividends to stockholders in the casualty company. In Germany almost the entire amount of premiums paid goes to the proper beneficiaries. I will not follow in detail the various features of the German system, but after a trial of more than 25 years all parties are agreed as to its advantages. And during this same period Germany has advanced to a high position in manufacture and commerce, and the condition of its workmen has so improved that emigration has materially decreased.

The German industrial insurance is undoubtedly more effective than the English Compensation act, but both systems are worthy of the most careful consideration and should enable us to prepare suitable laws for our own State.

The Position of the United States.

While I have referred to these two systems at length as affording the most conspicuous examples of desirable legislation, it is also worthy of notice that France, Austria and Sweden, and practically all the industrial countries in Europe have adopted some system for the protection of their workmen. The British colonies, with the exception of Canada, have followed the examples set by England. Our own country, so progressive in other respects, is a laggard in legislation of this character.

I regard this as an economic question, and I am expressing these views from that standpoint. The payment of such indemnities or insurance to injured men or their families is a matter of common justice, and our laws ought to be changed so as to require it. Such a system would be infinitely better for both employer and employee than to have the same amount distributed from charitable or philanthropic motives. I firmly believe that the representatives of employers and employees should unite in asking the next legislature of Michigan to create a commission, following the example of Minnesota, to give this subject careful consideration and draft a suitable law. I feel sure that the adoption of some such system as I have discussed will be of the greatest benefit

to both employer and employee as well as being for the best interests of the State.

Philippine Imports and Exports.

WASHINGTON, D. C., September 27, 1909.—As the products of the United States, whether made of domestic or imported materials, are now entitled to free entry into the Philippine Islands, by virtue of the terms of the Payne Tariff act of August 5, 1907, and the act of the same date revising the tariff of the archipelago, special interest attaches to a compilation prepared by the Bureau of Insular Affairs of the War Department showing the commerce of the islands for the nine months ending March 31, 1909. On the basis of the returns for the past fiscal year it can be said that these figures closely approximate three-fourths of the totals for a twelve-month.

The total imports into the Philippines for the nine months ending March 31, 1909, were valued at \$20,739,188, as compared with \$23,777,005 during the same period of 1908 and \$20,962,217 in 1907. The exports in the same periods were, respectively, \$23,221,573, as compared with \$24,254,687 in 1908, and \$23,651,161 in 1907. It will be noted that in both imports and exports there was a decline in 1909 as compared with 1908 and 1907, although the shrinkage as compared with 1907 was but slight. Of the total imports during the nine months of 1908-1909, the United States supplied \$3,366,672, as compared with \$3,618,283 and \$3,519,357 in immediately previous corresponding periods, while of the total exports the United States absorbed \$7,066,292 in 1908-1909, as compared with \$6,547,673 in 1908 and \$8,375,565 in 1907.

Exclusive of Government and railroad materials entitled to free entry, which are not recorded in these statistics, although the figures would be very interesting, the total imports of iron and steel during the nine months ending March, 1909, were valued at \$1,300,752, as compared with \$1,685,581 in 1908, and \$1,920,107 in 1907. The decline is, in part, attributed to the fact that in 1909 and 1908 certain importations were granted free entry as railroad materials, while in 1907 similar goods were required to pay duty, and were therefore included in these returns.

The share of the United States in the iron and steel products absorbed by the islands during the nine months ending March 31, 1909, was \$516,670, or about 40 per cent. of the total. The following table shows the imports by items and the value of the contributions of American manufacturers:

Imports Into the Philippines During the Nine Months Ending March 31, 1909.

Article.	Total Imports.	Imports from the United States.
Bar iron.....	\$42,229	\$3,413
Bars and rods of steel.....	56,583	32,650
Rails.....	34,029	10,047
Sheets and plates, iron.....	239,538	97,297
Sheets and plates, steel.....	21,016	10,851
Structural iron and steel.....	47,941	14,563
Wire and wire cables.....	24,063	7,319
Locks, hinges and builders' hardware.....	26,752	5,247
Tools.....	69,831	30,216
Castings.....	50,592	22,180
Cutlery.....	33,101	7,547
Needles, pens, hooks, &c.....	22,545	5,160
Electrical machinery.....	15,784	13,795
Sewing machines.....	50,169	19,849
Boilers and parts of engines.....	23,597	4,656
Locomotives.....	1,999
Stationary engines.....	27,155	14,614
Typewriters.....	36,851	36,469
Other machinery.....	191,185	82,675
Wire nails.....	14,246	786
Other nails and spikes.....	25,782	10,713
Pipes and fittings.....	40,601	25,268
All other manufactures of iron and steel.....	205,163	61,355
Totals.....	\$1,300,752	\$516,670

In bar iron the principal competitors of the United States were Great Britain and Belgium. Great Britain supplied the bulk of the importations of steel bars and rods, rails, sheets and plate. Germany furnished nearly all the structural steel not bought in this country and shared with Great Britain the greater part of the trade

in wire, wire cables, builders' hardware and tools, castings, cutlery and fine articles, including needles, pens, &c. More than half the sewing machines imported were purchased in Germany, while Great Britain took the lead in boilers and locomotives. In miscellaneous manufactures of iron and steel Great Britain stood second to the United States, while Germany occupied third place.

W. L. C.

A New Cutler-Hammer Lifting Magnet.

The lifting magnet illustrated has been developed by the Cutler-Hammer Clutch Company, Milwaukee, Wis., with a view to making the installation of this modern labor-saving device profitable to many small plants that have hitherto been deterred from purchasing a lifting magnet. The 50-in. magnet, the size usually employed by



A New Medium Sized Lifting Magnet Made by the Cutler-Hammer Clutch Company, Milwaukee, Wis.

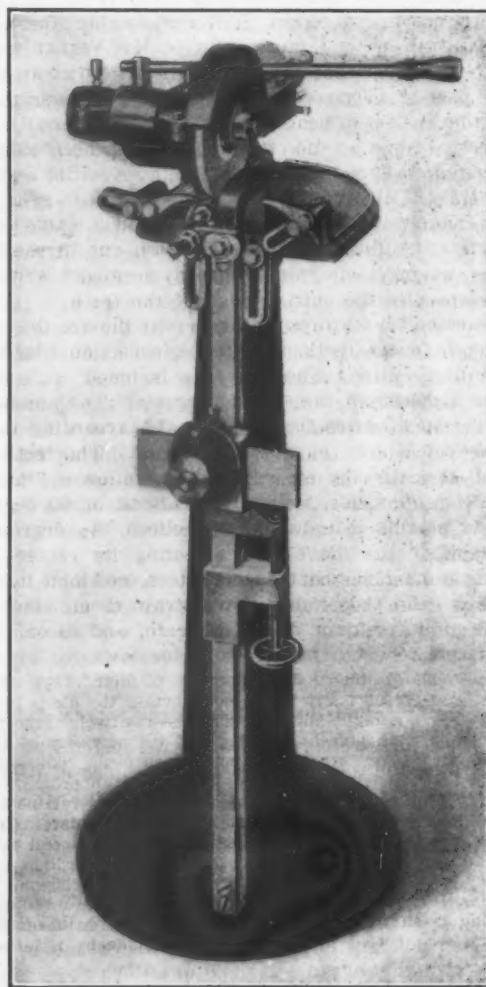
the larger industrial plants for handling pig iron, scrap, &c., is often too heavy and generally too expensive for small establishments. The new magnet is not open to these objections, as both the weight and first cost have been cut practically in half, while at the same time the lifting capacity is only about 500 lb. less than that of the larger magnet.

The new magnet is designed especially for use with locomotive cranes, but may be used on overhead cranes as well. In the first case, it is usually supplied with a yoke and single link suspension requiring only 27-in. head room, while for use on overhead traveling cranes or gantry cranes, the familiar chain tripod form of suspension, commonly used with larger magnets, is employed.

In the design of the new magnet attention has been given to the important considerations of heat, radiation, anchoring of the coil and to securing absolutely water tight joints, so that the magnet can be used out of doors in all weathers without damage. No combustible material of any kind is used in its construction, and it is claimed that the coil of this magnet has been heated, under test, to 470 degrees F., without detrimental effects. Figures furnished the manufacturers by steel mills where these magnets are in use show that they are capable of unloading pig iron from gondola cars at the rate of 100 tons per hour at a cost of $\frac{1}{2}$ cent per ton, as against 5 to 8 cents per ton for manual labor.

The Hunter Saw Sharpening Machine.

A machine for sharpening circular milling saws, recently perfected by the Hunter Saw & Machine Company, 59th and Butler streets, Pittsburgh, Pa., not only gums, faces and tops the teeth, but also provides for beveling the cutting points. This is recognized by users of milling saws as adding materially to the life of the saw blade, and at the same time causes it to consume less power in operating. By beveling every alternate tooth and topping the square tooth to a lesser radius than the roughing or beveled tooth, the chips are allowed to flow more freely, which not only prevents them from clogging between the teeth, but also reduces the friction



A New Machine for Sharpening Circular Milling Saws Made by the Hunter Saw & Machine Company, Pittsburgh, Pa.

on the sides of the cut. A higher cutting speed and a more rapid feed can be maintained without the danger of dulling the cutting points of the teeth.

On the roughing teeth the bevel should be 45 deg. and about 1-6 of the face on each side. This being the case, two-thirds of the material is removed by the roughing or beveled tooth, and the remainder by the finishing tooth. By sharpening milling saws in this way on the Hunter machine more cutting can be done, and the blade

does not have to be sharpened as frequently as when sharpened in the usual way.

The emery wheel arbor is supported on both sides of the pulley by adjustable bearings. The ram is square in section with one of its diagonals vertical, and is held in position by an adjustable cap, with liners that can be removed to take up wear. The opening in the cap is covered by a dust guard, and the ram is moved by a hand lever. The saw arbor is raised and lowered on its square supporting column by sliding it to about the proper position for the saw to be gummed, and when the nut is clamped to the column, further adjustment is made with the screw and hand wheel. The saw arbor is mounted on an apron having slide adjustment to either side of the center, right and left. Adjustable stop pawls are provided. The ram is fitted with a stop latch and an adjustable screw at the rear end. When grinding bevels, the stop latch is thrown in. When topping and gumming teeth, the stop latch is thrown out allowing the emery wheel to pass over the teeth. The bearings are carefully fitted to eliminate all lost motion, which is very essential on a machine of this kind. Saws from 6 to 54 in. can be sharpened on this machine.

The Elliott Cresson Medal for the Vernaz Milling File.

The Committee on Science and the Arts of the Franklin Institute has a report in the September *Journal* of the institute on its investigation of the Vernaz milling file. It is stated that this file is the result of an effort on the part of Alexis Vernaz of Yverdon, Switzerland, to save from the scrap heap a large lot of accidentally hard castings. It was so successful that it has been patented in England, France, Germany, Belgium, Austria, Switzerland, Italy, Canada and the United States. The last named patent is dated December 12, 1905. One of its claims is: "A file provided with teeth cut in the form of arcs, having their bases (chords) located rearwardly with respect to the cutting edge of the teeth."

The essential features of the Vernaz file are the shape and depth of the teeth, which are in section like those of a milling cutter. They have an included angle of 60 degrees and a front rake of $1\frac{1}{2}$ degrees. The number of teeth per inch varies from 6-2-3 to 16, according to the purpose for which the file is intended. The teeth are cut one at a time by an end mill, or hollow cylinder of $2\frac{1}{2}$ to 3 in. diameter, with a conical end of 60 degrees, the axis of this cylinder being inclined $1\frac{1}{2}$ degrees to the plane of the file and intersecting its center line. Automatic machines rotate the cutters, feed them into the file blanks the proper depth, withdraw them, move the file one pitch, feed the cutter in again, and so on. The committee's report says:

In practical tests we find that the circular shape of the cutting edges act normally to the cut whether the file is pushed straight or at an angle, and also that the relatively large pitch and depth of teeth prevent clogging and the necessity of cleaning, and produce a surprisingly smooth surface. The surface produced on steel is smoother than that from an ordinary second-cut file, due to the fact that the latter quickly retains small chips of the steel in its teeth which scratch the surface. On all fibrous and tenacious materials, like wrought iron, steel, brass, aluminum and the alloys, the improvement over ordinary files was very marked, the cut being clean, with no clogging and scratching. That the action is cutting and not abrading or scratching is shown by the chips, which under a magnifying glass are seen curled up and look as if made by a lathe or planing machine.

Details are then given of the tests made under the direction of the committee, the Herbert file testing machine being used. The tests covered 39 files of 12 different makes, 32 tests being on cast iron and 5 on high carbon steel. Four Vernaz files were tested on cast iron and three on steel. The cast iron test bars were of 1 in. square section of the following composition: Combined carbon, 0.051 per cent.; graphite, 2.988; silicon, 1.915; manganese, 1.204; phosphorus, 1.332; sulphur, 0.075; titanium, 0.035; iron, 92.4. They were annealed for uniformity. The steel test bars ran 0.64 per cent. carbon, 0.80 manganese and 0.41 silicon. The report continues:

Each test was continued until the file slid over the end of the test bar without removing any metal; 28 out of the 29 commer-

cial files on cast iron ranged in the cubic inches of metal removed from 0.7 to 20.6, while one lone hero removed 73. The average cubic inches per 10,000 strokes varied from 1.4 to 6.34, but these figures did not correspond with the others, showing some to have better cutting qualities and others better endurance. Another curious feature was that very rarely indeed did the two sides of the file show anything like equality, the worst case being 20.6 cu. in. removed by one side and 0.4 by the other, the best case being 11.8 by one side and 10 by the other.

Of the four flat Vernaz files on cast iron, the worst filed a total of 48.2 cu. in., using both sides, and the best 143.75 cu. in., and the variation between the sides was very slight, the worst case of variation being 49.1 for one side and 34.9 for the other. An high carbon steel the Vernaz files did not show such marked superiority, due probably to the fact that the best commercial files were selected to compete with them. The minimum and maximum figures for the commercial files were 3.6 and 6.4 cu. in. and for the Vernaz files 9 and 25.8 cu. in. In this case, however, two out of the three Vernaz showed a marked difference in the two sides. Evidently the art of making files, after centuries of evolution, is still far from being an exact science.

In recommending the award of the Elliott Cresson Medal to the inventor, the committee says that it "considers that Alexis Vernaz has made the first radical, leading improvement in files for generations and has done a service to the world, not only in presenting a new and efficient cutting tool for metals to be operated by hand, but also in the impetus which the introduction of this tool will give to the improvement in cutting capacity and endurance of the regular type of files." The Vixen file, as the Vernaz invention is known, was described in *The Iron Age* of May 13, 1909, page 1562.

The International Testing Congress in 1912.

The election of Dr. Charles B. Dudley, Altoona, Pa., as president of the International Association for Testing Materials fitly crowns his many years of labor in the testing of materials of construction as well as his years of service as president of the American Society for Testing Materials. Dr. Dudley's election and the decision of the recent congress at Copenhagen to hold the sixth congress of the International Association for Testing Materials in the United States in 1912 is thus referred to by Secretary Marburg of the American Society for Testing Materials in a circular just issued:

"It will be remembered that at the last annual meeting of the society resolutions were adopted conveying to the International Association, through President Dudley, a cordial invitation to hold the next congress in this country. The news of the acceptance of this invitation, with the added compliment to our worthy president, will doubtless be received with keen gratification by every member of the society. The immediate effect should be a marked stimulation of the American membership of the association."

There are now 311 American members who also hold membership in the International Association. In the same circular Secretary Marburg announces that the Executive Committee of the American Society for Testing Materials has authorized the creation of the following new technical committees which are now in course of organization: On Standard Tests of Insulating Materials, on Alloy Steel, on Nonferrous Metals and Alloys, on Explosives, on Standard Samples, on Standard Specifications for Wrought Iron.

The Westinghouse Electric & Mfg. Company has received from the Empire District Electric Company, Joplin, Mo., an order for two turbine engines of 10,000-hp. capacity each, two Le Blanc condensers and two 10,000-hp. electric generators, together with equipment for 12 substations for distributing power to zinc mines and manufacturing plants. The order is one of the largest that has come to the Westinghouse interests from a single concern in many months and aggregates for machinery alone about \$500,000. It is stated that the Westinghouse Electric & Mfg. Company closed more new business in August than for any previous August in the history of the corporation, not even excepting August, 1906, which held the record up to this time. The company feels the shortage of its force, and is augmenting its departments with additional men as rapidly as this can be done.

Large Plans of the Tennessee Company.

A Great Outlay for New Water Supply and By-Product Coke Ovens.

In an article in *The Iron Age* of May 21, 1908, describing the new open hearth steel plant of the Tennessee Coal, Iron & Railroad Company, at Ensley, Ala., and the modernized blast furnaces at the same place, reference was made to the importance of the question of additional water supply at these works. It was stated that this matter was one to which serious attention would need to be given if further additions to the steel industry in the Birmingham District were expected. At that time data had been collected on the proposal to draw on the upper reaches of the Warrior River and to provide various reservoirs in the catchment area. An aqueduct of 100,000,000 gal. daily capacity to convey water to Birmingham was figured on, starting in the Locust Fork, about 55 miles north of Birmingham.

Originally, it was proposed that this additional water supply be provided by the city of Birmingham by means of a bond issue, possibly with the co-operation of iron and steel companies to the extent of their taking at least a part of the bond issue. Without waiting for the development of this larger plan, the Tennessee Coal, Iron & Railroad Company has announced its intention of proceeding to provide its own water supply. The plan is outlined by President George G. Crawford in a letter to the *Manufacturers' Record* of September 23, and involves the building of a storage reservoir to hold 2,500,000,000 gal. President Crawford says that, in view of securing this new water supply, his company will at once start a number of improvements, including the building of a by-product coke oven plant, with a capacity of about 3000 tons a day, and the opening of a new coal mine of large capacity. We quote from the letter as follows:

"The water supply for the Ensley plants of the Tennessee Company is drawn from Village Creek, and supplemented during the dry season by water from the Birmingham Water Works Company. In periods of drouth the quantity of water flowing down Village Creek has been as low as a 1,000,000 gal. a day, and with all the water which could be secured through the mains to Ensley from the Birmingham Water Works, not a sufficient quantity was obtained to enable the plants to operate at full capacity; nor has it been feasible to produce power cheaply on account of lack of water for condensing or gas washing.

"It is proposed to remedy this serious condition by securing an adequate water supply. For the past 18 months an exhaustive investigation of the most economical source of water supply has been going on under the direction of Morris Knowles of Pittsburgh, Pa. This involved a study of all the feasible methods of bringing water cheaply to the vicinity of Ensley. Studies of the records of rainfalls and watershed yields have been made. Stream gaugings of all the important streams in the vicinity of Birmingham, and evaporation tests at the Shades Mountain Reservoir of the Birmingham Water Works Company and at East Lake have been made, and a large amount of valuable data has been secured, from which the method outlined below has been designed.

A 2,500,000,000-Gallon Reservoir.

"The plan which has finally been adopted is to con-

struct a dam across the channel of Village Creek immediately above the mouth of Venison Creek, impounding the waters of Village Creek and its tributaries. A channel will be cut up one of the tributaries (Camp branch) to a location for the pumping site, shown on the accompanying map. This pumping station will have a pumping capacity of 25,000,000 gal. per day, and from it a 42-in. pipe line, 2½ miles long, will carry the water to a reservoir, from which a distributing pipe will carry it by gravity to the Ensley Works, and to the tracts of land which the Tennessee Company has purchased below Ensley, the reservoir being about equally distant from both places.

"This scheme furnishes the advantage of maximum usage of water with minimum storage, for the reason that the waste waters from the Ensley Works will flow back into Village Creek, and will then pass through the channel in Camp branch to the pumping station again, several months being occupied in the travel of the water through the reservoir, which will give it time to deposit its sediment and cool. Some of the details regarding the project are as follows: Height of the dam, 90 ft.; length of



the dam, 490 ft.; length of the lake, 5 miles; total impounding capacity of the reservoir, 2,500,000,000 gal. The dam will be built of concrete, and the crest of the dam will be a driveway connecting the opposite sides of the valley, the spillway being spanned by a concrete arch.

"During the winter and spring the reservoir will fill, and during a normal year a quantity of water practically equivalent to the reservoir capacity will flow over the dam; thus the lake will be kept fresh. Of the 2,500,000,000 gal. impounded in the reservoir, the total usable quantity will be practically 1,700,000,000 gal., leaving a considerable depth of reservoir to allow for silting. The shores of the reservoir will be planted with trees and protected from the washing spring rains. The dam will be constructed to permit of an increase of 15 ft. in height, which will yield a further supply of water should it be needed, and the pumping station will be designed to permit the installation of an additional 25,000,000-gal. pumping capacity.

"The Birmingham Southern Railroad Company will extend its tracks from near Wylam to the pumping station for permanent use, and a temporary track to the site of the dam near Venison Creek for the delivery of material will be constructed. A camp for the employees en-

gaged in the building of the dam will be built near the site; a thorough organization will be effected, and the entire work will be carried on by the Tennessee Company.

Other Improvements.

"When this water supply is secured it will be possible to proceed with the plans for extending the company's operations to meet the requirements of the Southern markets. Other improvements which will be made by the Tennessee Company immediately are a new coal mine and a by-product coke oven plant with a capacity of about 3000 tons per day. The Tennessee Company has recently purchased lands joining its holdings on Flint Ridge, with its holdings on the west side of Opossum Valley. The by-product coke oven plant will be built on

The Jarvis Drawing-In Chuck.

The drawing-in chuck shown in Fig. 1, is designed to take the place of a drawing-in chuck built into an engine lathe, and is so arranged that it can be used on milling machines, lathes, grinding machines and other machine tools. It is manufactured by J. A. Jarvis, its inventor, at Waltham, Mass., and marketed by the Chandler & Farquhar Company, Boston, Mass. The device has an eccentric throw of $\frac{1}{4}$ in. off center and is graduated on its face to read 0.001 in., which it will register accurately, and is furnished with an adjustment by means of which it can readily be made to run true. It is especially adapted for accurate work with small interchangeable parts, and can be used for eccentric

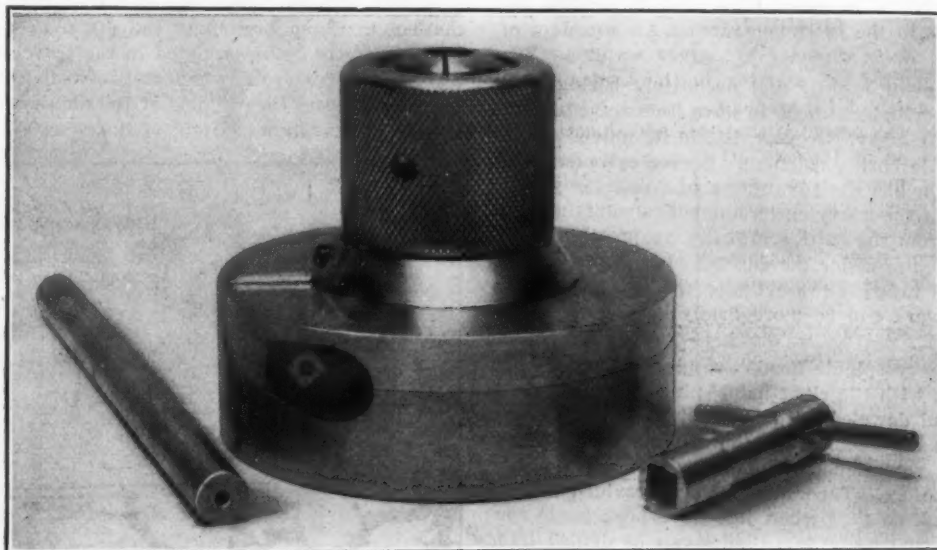


Fig. 1.—The Jarvis Drawing-In Chuck, for Use on Lathes, Millers, Grinders, &c.

this site. In addition to these improvements, the necessary extensions of the Birmingham Southern will be made."

The Largest Day's Output for a Blast Furnace.

A question has come to *The Iron Age* concerning the largest output of any blast furnace in the United States for a single day. While a 24-hour product at any furnace is not significant, particularly where special preparations are made for a record run, it is interesting as a matter of history to note again that Duquesne Furnace No. 1 produced 832 gross tons of Bessemer iron on March 30, 1906. On the same day the four Duquesne furnaces produced 2882 tons of iron. The best week's record was made by these four furnaces in the period between March 24 and 30, 1906—a total of 18,028 tons. The best month's record for the four Duquesne furnaces was that for March, 1906, when the total output was 78,119 tons. It will thus be seen that in the best day's record for the group the average per furnace was $720\frac{1}{2}$ tons; in the best week's record the daily average per furnace was 644 tons, and in the best month's record the daily average was 630 tons per furnace. Previous to March, 1906, the best month's record for the four Duquesne furnaces was in October, 1904, when the total was 74,600 tons. The record which stood previous to that time was made in October, 1898, when the total for the month was 73,258 tons.

A New Lathe Chuck Company.—The S. E. Horton Machine Company, Windsor Locks, Conn., has established shops in that town for the manufacture of chucks. A specialty will be made of lathe chucks, from 6 to 26 in. The works are in the center of the town and are equipped with standard and special machines for producing on a modern manufacturing basis. S. E. Horton is president and treasurer of the company. He has secured as superintendent O. S. Rockwell, who has had a long experience in the manufacture of chucks.

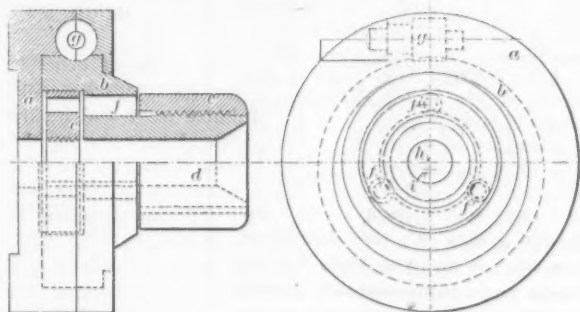


Fig. 2.—Details of the Construction of the Jarvis Drawing-In Chuck.

work from 0 to 0.25 in. After being so used it can be brought back to 0 and be true for straight work. The chuck may be employed when turning eccentrics or bushings or other irregular work.

The details of the chuck are shown in Fig. 2. The back part *a* is bored eccentric to receive the part *b*, which constitutes the nose and upon which the nose piece *c* is secured. The nose piece comes in contact with the three pins *f*, which are inserted in the ring *e*. The split chuck *d* is passed through the nose piece and screwed into the ring. Thus when the nose piece is screwed up to the shoulder, coming in contact with the pins, the movement of the ring draws the chuck back upon its taper seat, tightly gripping the work. Back of the ring are springs, the function of which is to open the chuck jaws instantly when they are released. A worm is cut in the periphery of the part *b* which engages the worm gear *g*, actuated by a socket wrench. The action of the worm moves the centers *h* and *i*, which are respectively the centers of the nose and back of the chuck, to or away from one another, to make them concentric or eccentric as desired.

For boring operations on milling machines in con-

nection with jig and fixture work there is the advantage of adjustment by means of the eccentric cam and test bar, work being located without the use of buttons. The adjustment for such work is obtained by removing the test bar and inserting the drill; opening up the hole to be bored within a 64th of the size required, and then inserting the boring bar and finishing the hole to size by means of the graduations of the chuck. The chuck has a capacity of from 1-16 to $\frac{1}{2}$ in. varying by 64ths or 32nds, as desired. It can be applied to a universal grinder for internal and external grinding, and can be used when grinding eccentric bushings within its limits, from 0 to 0.25 in. off center. The chucks are furnished in any desired size.

A Hoefler Vertical Two-Spindle Engine Boring Machine.

The problem of rapidly and accurately boring automobile engine cylinders seems to have been solved by the Hoefler Mfg. Company, Freeport, Ill., in its universal vertical two-spindle boring machine. Boring cylinders in a vertical position has the advantages of doing away with the overhang of the heavy cutters and of causing the chips to fall away from the cutters into the compression space instead of wedging under the cutting edge, springing the cutter bar and injuring the cylinder walls; also, in this position, the work can be more firmly held and rapidly inspected.

The two heavy spindle heads are gibbed to the short stiff cross rail, with the right hand spindle solidly bolted to the rail, and doweled with taper pins, while the second spindle is adjustable by a hand wheel screw feed to provide for variations in the center distances in different sized motors. Tapered holes are provided in the adjustable head, so that when jigs have been made for the various sized motors these holes can be drilled into the cross rail, thus providing positive stops for each size motor and saving time in locating the heads. The bearing of the spindle sleeve is slotted so as to provide for wear, and thereby maintain the spindle rigidly supported.

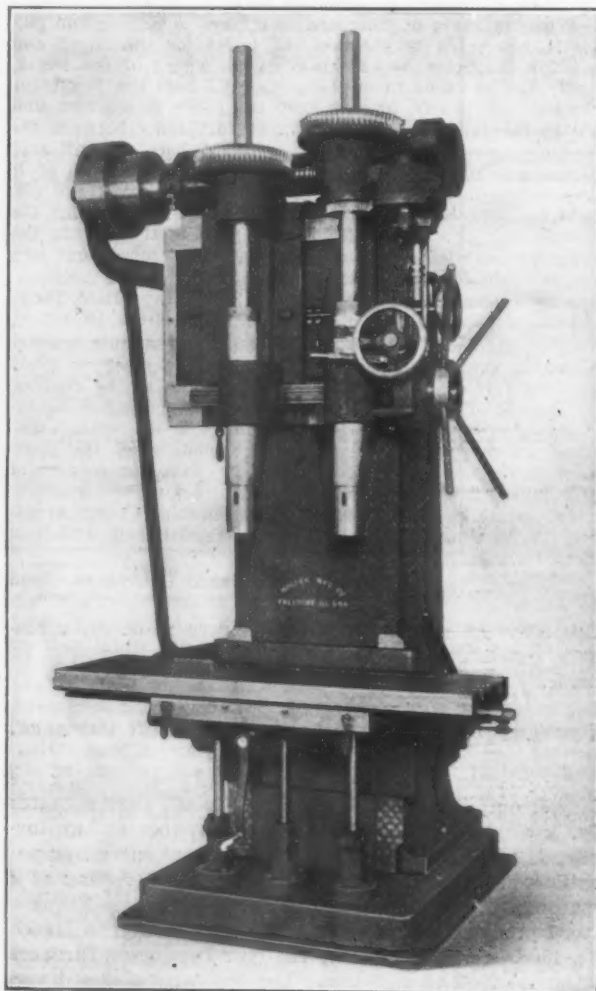
The spindles are made of a high grade of crucible spindle steel, chosen particularly for its toughness, and are accurately ground so as to minimize wear and insure maintenance of accuracy. The spindle sleeves are bushed with interchangeable phosphor bronze bearings so that these can be easily replaced. The thrust bearings are also phosphor bronze. The drive of the spindles is through a pair of heavy double lead worms driving phosphor bronze faced worm gears, the studs of which are ground and run in copper hardened babbitt bearings. An extra heavy key in the driving worm gear engages in the key way in the spindle, and throughout the drive is ample for any work within the range of the machine. The worms are encased in an oil pan provided with a felt oiler, which secures sufficient though not excessive lubrication. An oil pan is placed under each worm gear to return any oil to the worm oiling cases. The final drive is obtained through heavy spur gearing and a wide-faced three-stepped cone pulley.

In a machine of this character ample feeding power must be provided, and a positive geared feed similar to the geared feed furnished with the company's regular line of drills was designed, driven directly from the main spindle. Four changes are provided and the entire gearing mechanism is encased in a neat gear box. The vertical worm is thrown into engagement with a phosphor bronze gear encased in the worm wheel shell by means of a small lever directly before the operator, and an adjustable automatic stop is provided for the disengagement of the power feed at any predetermined point. A long single cross spindle with teeth cut its entire length drives both spindles uniformly.

The long table has unusually great vertical depth to give it the necessary stiffness to resist springing when jigs are clamped to it. The bearings in the saddle are liberal and ample provision is made for lubrication; the oil holes are in front for convenience in oiling. The

traverse of the table is obtained through a coarse lead screw or a rack and pinion, according to the requirements. The table is gibbed to a rigid knee which besides possessing great vertical depth is also supported by two supports in addition to the elevating screw. The bearings are wide both in the saddle and on the column. The knee has very stout ribs which resist the twisting and collapsing strains brought upon it when the saddle is heavily loaded and at the end of the travel.

The method of operating is extremely rapid and simple. Four units of two cylinders each can be placed in properly designed jigs and cylinders Nos. 1 and 3 bored simultaneously. Then the table is moved over and cylinders Nos. 2 and 4 are bored. While the process of boring is taking place, cylinders Nos. 5, 6, 7 and 8 are being placed in their jigs. As soon as the work is completed



A Universal Vertical Two-Spindle Automobile Engine Cylinder Boring Machine Built by the Hoefler Mfg. Company, Freeport, Ill.

on the first set of units, the table is set over so that cylinders Nos. 5 and 7 can be bored, and so on with Nos. 6 and 8. Meanwhile, new cylinders are being placed on the opposite end of the table. Thus practically continuous boring can be accomplished. The horizontal table method as described has its evident advantages over the revolving table type, as it insures not only greater accuracy in alignment of the bores but a truer and more dependable registration for the various cylinders.

The general specifications of this machine are as follows:

Greatest height from floor to top of column.....	110 in.
Greatest distance from spindle to table.....	30 in.
Minimum distance from center to center of spindles....	9 $\frac{1}{4}$ in.
Maximum distance from center to center of spindle.....	19 in.
Speed reduction.....	1 to 27
Distance from column to center of spindle.....	12 $\frac{1}{2}$ in.
Face of column.....	24 in.
Vertical feed of spindle.....	19 in.
Diameter of spindle.....	2 $\frac{1}{2}$ in.
Feed of spindle per revolution.....	0.062, 0.125, 0.187, 0.250 in.

The range can be changed to any feed desired.

Size of table.....	18 x 56 in.
Size of largest cone pulley, three-step.....	14½ x 4½ in.
Size of smallest cone pulley, three-step.....	7½ x 4½ in.
Size of tight and loose pulleys.....	14 x 4½ in.
Speed of driving pulley.....	400 rev. per min.
Large driving worm gear diameter.....	13 in.
Diameter of worm double lead.....	4 in.
Spindle fitted with Morse taper.....	No. 5
Floor space.....	52 x 58 in.
Net weight.....	8,000 lb.
Crated.....	9,000 lb.

Judicial Decisions of Interest to Manufacturers.

ABSTRACTED BY A. L. H. STREET.

Sales—Remedies of Seller on Buyer's Refusal to Accept.—Where a buyer of merchandise refuses to receive and pay for it, the seller may retain the goods for the buyer and sue for the price, or sell them as the agent of the buyer, apply the proceeds upon the price, and hold the buyer for the balance, if any, or may keep the goods as his own and sue as for damages sustained for the difference between the contract price and the market price. Where plaintiff sold defendants 10,000 lb. of merchandise, and after part of it was delivered and paid for, 400 lb. were delivered and not paid for, and defendants refused to accept and pay for the remainder and plaintiff sued for the price of the 400 lb., the judgment in that suit was not a bar to a subsequent suit for damages for refusing to take and pay for the merchandise rejected. (New York Supreme Court, Appellate Term, *Rusch vs. Klausner*, 117 New York Supplement 1074.)

Suit Against Guarantor—Evidence.—In a suit against a debtor and his guarantor to recover the price of goods sold the former, evidence showing payments to the creditor on account of the principal debtor is not sufficient to reduce the amount of the guarantor's liability, where, though the proof shows that the payments were made after the guaranty, it does not show that they were made for goods sold and delivered by the creditor to the principal debtor subsequent to the guaranty. (New York Supreme Court, Appellate Term, *Dimock & Fink Company vs. Mitchell*, 117 New York Supplement 1029.)

Sales—Breach of Contract—Damages.—Evidence held to warrant a finding that a contract of sale of certain railroad equipment, &c., was made with defendant's testator and on his credit, and not on the credit of certain railroad corporations in which testator was interested. Where defendant, immediately after the death of his testator, who had contracted with plaintiff for certain railroad equipment, repudiated the contract before time for performance had arrived, the contract being executory, plaintiff was authorized to treat it as terminated and to sue at once for its breach. In an action for breach of an executory contract for the construction and delivery of railroad equipment of a special charter and gauge, prior to the time for delivery, the seller's measure of damages was his outlay and expenses, less the value of materials on hand and the profits which might have been realized by performing the contract. (United States Circuit Court, District of Maine, *Portland Company vs. Maine*, 169 Federal Reporter 968.)

Corporations—Rights of Stockholders on Reorganization.—A minority stockholder of a bankrupt corporation is not entitled to an injunction to restrain the carrying out of a plan of reorganization by the majority, which contemplates the acquisition of the company's property only through purchase when sold at public sale under order of the court of bankruptcy. (United States Circuit Court, Southern District, New York, *Schuler vs. Woodward*, 169 Federal Reporter 1012.)

Patents—Infringements—Sales Abroad.—An injunction against the infringement of a patent is not violated by the sale of infringing articles manufactured before the injunction was issued in a foreign country. (United States Circuit Court, Southern District of New York, *Rushmore vs. Manhattan Screw & Stamping Works*, 170 Federal Reporter 188.)

Patents—Infringement—Articles Covered by Domestic Patent Bought Abroad.—The use of an article covered by a United States patent in the United States can no more be controlled by foreign law than its sale can, and a purchaser of such an article in a foreign country, although from one there authorized to sell it, is chargeable with infringement if he brings it into the United States and there uses it. (United States Circuit Court of Appeals, Second Circuit, *Daimler Mfg. Company vs. Conklin*, 170 Federal Reporter 70.)

Patents—Infringement—Railroad Switch.—The Moxham patent, No. 539,878, for railroad switch work, embodying a single center piece with hardened surfaces, to be connected with the rails by a separate body of cast metal, discloses patentable invention of some degree of merit, but

must be limited to the particular construction described. As so construed, held not infringed. (United States Circuit Court of Appeals, First Circuit, *Lorain Steel Company vs. Barbour-Stockwell Company*, 170 Federal Reporter 79.)

Injuries to Employees—Jury Questions.—In an action for injuries to a servant through being struck by the plug of a pet-cock in a riveting machine, which blew out, plaintiff held entitled to go to the jury on the question of defendant's negligence. In an action for injuries to a servant, whether plaintiff assumed the risk of working with a defective pet-cock, or whether it was safe, held, under the evidence, questions for the jury. (Supreme Judicial Court of Massachusetts, *Oakey vs. Robb-Mumford Boiler Company*, 88 Northeastern Reporter 892.)

Partnership—Liability of Retired Partners.—A retired partner will remain liable to firm creditors, who in good faith dealt with the apparent partnership, until they have been actually notified of his retirement. Though a retired member of defendant firm, with whom plaintiff firm dealt in good faith in selling goods to defendant's former partnership as apparently including him, and with notice of his retirement, urged as a bar to his liability that before the indebtedness was contracted the constituency of the plaintiff firm had been changed by the admission of new members, and that, as he was not then a member of defendant firm he could not be held, because credit could not be extended on the strength of his membership, the plaintiff firm had undergone no internal transformation which destroyed its rights as a creditor, for in contemplation of the law he still held himself out as associated with his former partners, and, even if he was not informed of this change in the plaintiff firm, he was not exonerated. Supreme Judicial Court of Massachusetts, *Viotor vs. Spalding*, 88 Northeastern Reporter 846.)

Bankruptcy—Chattel Mortgages—Conditional Sales.—A contract by which petitioner furnished certain implements to a bankrupt provided that all goods on hand and the proceeds of the sales of all goods received under the contract, whether consisting of notes, cash, or book accounts, the bankrupt agreed to hold as collateral security, in trust for the benefit of petitioner, until all obligations under the contract due petitioner from the bankrupt had been paid in cash. Held, that such agreement constituted an enforceable trust as between the bankrupt and his trustee, and not a conditional sale. Under the laws of North Carolina, a chattel mortgage or contract of additional sale is valid between the parties without registration. (United States Circuit Court of Appeals, Fourth Circuit, *Walter A. Wood Company vs. Eubanks*, 169 Federal Reporter 929.)

Railroad Companies—Misdelivery of Freight—Damages.—A shipper whose freight was misdelivered by a railroad company and carried to a wrong destination was not bound to reduce his damages by reshipping the goods to the starting point and then to the proper destination, causing a delay of three or four weeks, rather than direct from the wrong to the right destination, where under obligation to make prompt delivery. The suggested action is more than required by the rule that plaintiff must use reasonable care to make the damages as small as possible. In a suit against the railroad company for the misdelivery, a custom offered in defense that the goods being on the dock of the steamship company to which they were misdelivered, with other goods, no matter how marked, were properly taken aboard, should be clearly established. It is no defense that the indorsement of the arrival notice issued by the railroad company failed to direct or require detention of a part of the goods, where the indorsement directed the goods to be delivered to the steamship company "per permit attached," and such permit specified that only part of the goods were to be received on the steamship. (New York Supreme Court, Appellate Term, *Spiero vs. New York Central & Hudson River Railroad Company*, 117 New York Supplement 1039.)

Railroad Companies—Demurrage Rules.—Demurrage rules promulgated by a railroad company must be construed most favorably to the shipper. Rules providing that demurrage will be charged at designated coal piers for the detention of coal cars held for transshipment, promulgated by a terminal carrier, required to deliver at such piers a shipper's coal, do not authorize the collection of demurrage for the detention of coal cars at a freight yard under control of the railroad company 12 miles distant. (New York Supreme Court, Appellate Term, *Staten Island Rapid Transit Railway Company vs. Marshall*, 117 New York Supplement 1034.)

Warehousemen—Delivery to Consignee.—A warehouse company, which received goods from a railroad company for storage after the buyer thereof rejected them and the seller refused to receive them back, could deliver them to the seller, where he was designated as consignee in the bill of lading, which bore on its face the words "not negotiable," in the absence of any knowledge of any new right in one claiming under the buyer. (New York Supreme Court, Appellate Term, *Queen Mfg. Company vs. F. C. Linde Company*, 117 New York Supplement 1032.)

THE IRON AGE

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The Rebuilding of Iron and Steel Stocks.

The rate at which iron and steel products are going into consumption in the United States to-day is a question of great interest to the entire iron trade. It is always of interest, for that matter, since broadly speaking it is the pivot on which prices turn. But especially in a period of recovery from depression the relation between supply and demand requires to be studied with unusual care; and just now every fact that bears on this problem is important. The argument might be put in this form: If, with some outlets for finished iron and steel still considerably smaller than in 1907, producing capacity is taxed almost up to the high point of that year, what may be expected, in strain upon the facilities of supply, when the lines that still lag come up even to their record of two years ago? The prediction is heard that 1910 will be the greatest year the iron trade has known. Sales for next year are only beginning. They could by no means form a basis for prophecy. The reasoning is simply that with partial recovery we are close to record production; continued recovery, following the marketing of enormous crops, will carry us past it.

It is more difficult now to arrive at the real consumption of iron and steel at a given time than when quite full statistics of pig iron stocks were available. The partial statistics recently collected by large interests show that, even with considerably increased production, pig iron stocks have been declining in the past three months, though not rapidly. It is never possible, however, even when furnace yard stocks are reported, to know how much is in the hands of buyers. They take in more than they currently use, when the market is advancing, and when prices are on a high level and a boom seems near its culmination they buy sparingly and let the furnaces carry the stocks. What is true of pig iron is true in much the same way of finished material. The factor impossible of measurement is the stocks in second and third hands.

The recovery in iron and steel this year has been called remarkable. It is unparalleled. Its rapidity and the fact that it came in the second year after the panic formed the basis of a suggestion some time ago that in the iron trade 1909 bore a resemblance to 1895, a year in which quick recovery gave way to reaction. But recent events have shown that these two coincidences of 1895 and 1909 are the only ones. No sign of reaction is visible to-day. However, any interpretation of this year's movement is faulty that does not take account of its stock rebuilding feature. The drift of recent comment

has been that as the mills in a number of lines have been falling behind on deliveries consumptive demand is greater than output. It is further pointed out that for plates, structural shapes and bars many mills have orders that will keep them busy until the end of the year; that upon mills in other lines not so heavily booked ahead new orders are steadily flowing in; that some large rail orders have already been entered for 1910, and that buyers of pig iron are contracting at advancing prices for delivery next year.

In considering whether the country is to advance steadily toward a new record in iron and steel consumption the character of the demand that has been bringing constant additions to the list of active furnaces and mills in the past four months is of interest. Going back to 1907, it was evident before the middle of the year that the boom in iron and steel was culminating. With prices at high level there was no incentive to buy largely. The premiums for prompt shipment that marked the excited periods of the boom had disappeared. Jobbers and consuming manufacturers did not need to carry heavy stocks. The prices of finished material were held, but the pig iron market, being free to move, showed what was happening. That the régime of price maintenance prevailing throughout 1908 did not encourage buying hardly needs telling. Throughout the country the depression was marked by a drastic reduction of stocks of finished iron and steel of all descriptions, whether in the hands of jobbers, of manufacturers who turn the products of the mills into other forms, or of ultimate consumers, chief among them the railroads. The smallness of the stocks carried by some large merchants and consumers seems ridiculous now. The open market announcement of February brought no change in this policy. Nor did the various reductions in prices in the next three months. But in late May and early June there came tremendous buying at the lowest prices of the year. The feeling everywhere was that the turning point was at hand. Probably never in the history of the iron trade was so enormous a business done in a month as in the last half of May and the first half of June.

As is well known, the steel manufacturers made every effort to prevent speculative buying. Apart from some contracts in bars, sales were limited to delivery in 1909. But there was full recognition of the fact that the country was bare of material and that a multitude of consumers needed to build up depleted stocks. Jobbers placed large contracts. Manufacturers contracted for their needs over a period of months and many made purchases large enough to restore their stocks to what they carried in prosperous years. The movement went through all the ramifications of iron and steel uses. It meant in part the rebuilding of stocks after nearly two years of depletion and this has been no small factor in the mill output of the past four months, along with the requirements for railroad work, for steel buildings and for all the industrial expansion that has come with the new growth of confidence.

It is evident at the same time that the restocking process is still under way and that for some time the mills will be making important shipments of this character along with those which represent passing of material into immediate consumption. In the congestion resulting from the remarkable movement of the past four months, stocks in jobbers' hands are being drawn upon to supply buyers who are not getting material as fast as needed from mills with which they have contracts. Some important jobbers are making as heavy shipments as at any time in their history. Many of their customers, in

turn, are carrying larger stocks than in two years. Thus the main fact in this side of the situation is that the aggregate of the country's stocks of finished iron and steel in the hands of all classes of buyers has been growing. When the work of stock restoration is completed it would appear that the country's actual, ultimate consumption must move up to a distinctly higher level to give continuous employment to the larger rolling mill capacity available for 1910.

A Car Shortage Calls for the Co-operation of Shippers.

Many large shippers, especially in the West, have had difficulty for several weeks in getting cars, and fears are entertained that the country is approaching a severe car shortage. On August 1 the railroads had a nominal surplus of 200,000 cars, equal to about 10 per cent. of their total freight equipment; but about half this surplus disappeared during August and the remainder has probably vanished in the movement of grain the past month. The difficulty thus far is not an actual shortage of equipment, but is due to the fact that all available cars have been distributed to country stations to receive grain, leaving the roads, in some cases, without cars to load their house freight.

The railroads are handling at the present time almost a record breaking movement of freight, the tonnage falling but little short of high water mark in 1907, with good prospects that all records will be passed before the end of the year. They have been giving commodity shippers better service the past two years than ever before in the history of American railroad traffic. Long haul shipments have been going through in a quarter to half the time it was necessary to allow in years gone by, and only a trivial percentage of fast freight merchandise has failed to make the advertised schedule time. It is greatly to the credit of the operating officials that, after two years of disappointing traffic and reduced earnings, they have been able to progress thus far into a season of heavy traffic without serious complaint.

If there should be a real car shortage later in the season it will probably be felt most severely in the "steel belt" of Pennsylvania and Ohio, not through any fault of the railroads operating in that territory but because of conditions of car movement over which they have no control. These roads always lose 20 to 30 per cent. of their cars in a busy shipping season such as is now under way. They have more carload traffic moving out to connecting lines than coming into the district. On one short but important line entering Pittsburgh the inbound movement of carload traffic is only 18 per cent. of the outbound movement. Cars that go out now to distant points loaded with iron and steel may not return until next spring, and in the meantime the roads which have invested their capital in these cars will only receive the nominal rental of 25 cents per diem. This general tendency of freight cars to leave "producing" territory where they are most needed is at the root of the difficulties of railroads and shippers in an active season.

New England has suffered severely in the past from congestion but not from car shortage, because more carload traffic moves into New England than comes out. The important roads operating just north of the steel belt have little trouble, as their traffic is of such a character that they tend to gain slightly in the number of cars on their rails during a busy season. The grain carrying roads in the West unload all their grain into elevators at their Eastern termini, so they usually have

cars for their industries for westbound loading, and they tend to gain cars rather than lose through the movement of carload traffic from the East into their territory. The transcontinental lines gain cars through the same movement of traffic, and the Southern roads usually gain during the cotton moving season, as their principal north bound commodities, lumber and pig iron, are easily transferred to northern cars at their northern termini, and they gain cars through shipments from the North.

The roads in the steel belt begin an active season under more favorable conditions than usual. Operating officials have been saving per diem charges on "foreign" cars wherever possible the past year, by sending them home, so that railroads which normally have fewer cars on their rails than the number they own have had difficulty in finding enough yard room or sidings to store their equipment. This accumulation of cars may prove a reserve that will carry the iron and steel industry over the worst of the anticipated trouble.

In a time like this, when a shortage of equipment is anticipated, shippers could do a great deal to assist the railroad officials by friendly co-operation. The classification rules make 36,000 lb. of manufactured iron or steel products a carload, but most of the equipment now in service is of 60,000 and 80,000 lb. capacity, and a large proportion of the cars carry 100,000 lb. Many customers are inclined to stand upon their rights and order their shipments in small carloads of 36,000 to 50,000 lb. when they could just as well take deliveries in cars loaded to full capacity. This form of co-operation is already practiced by many shippers, and it is unusually important in a season when the carriers have difficulty in protecting themselves against the loss of cars which they need to keep their local industries going.

The increase in the capacity of freight cars has been the most notable development of railroad traffic in the past 10 years. Box cars of less than 60,000 lb. capacity are rapidly disappearing. In 1902, when the Interstate Commerce Commission began publishing statistics of car capacity, there were 27,364 box cars of 30,000 lb. capacity, but on June 30, 1907, there were only 4248 left of these relics of the '70s. In 1902 there were 170,178 box cars of 40,000 capacity, but in 1907 there were only 94,637, and few of these will remain after another season of heavy traffic. The box cars of 60,000 lb. capacity increased in number from 355,391 in 1902 to 499,595 in 1907; those of 80,000 lb. capacity from 37,432 in 1902 to 171,020 in 1907, and those of 100,000 lb. capacity from 5467 in 1902 to 33,954 in 1907. The total number of box cars in 1902 was 708,861, with 19,051,105 tons total capacity. In 1907 there were 904,821 box cars, with 28,179,073 tons capacity.

In 1907 the carriers still had nearly 200,000 coal cars of less than 80,000 lb. capacity, and over 100,000 of these cars carried 50,000 lb. or less. The number of 50-ton cars had increased from 36,554 in 1902 to 220,600 in 1907. Altogether there were 534,448 coal cars in 1902, of 16,432,314 tons aggregate capacity. In 1907 there were 746,670, with total capacity of 28,468,524 tons. Ore cars are included with coal cars in the commission's classification. The total number of all kinds of cars in 1907, including flats, stock, tank and refrigerator cars, was 1,986,017.

The increase of about 70 per cent. in the carrying capacity of coal cars was an actual gain in the efficiency of this class of equipment, which is almost invariably loaded full, and it will tend to safeguard the country against any shortage of coal the coming winter. The increase during the five years of nearly 50 per cent. in box car capacity is to some extent a nominal gain. Only a

few commodities like grain are loaded uniformly to full capacity. The average loading of other commodities is not much above the minimum fixed by classifications and tariffs.

Since the disastrous car shortage of 1906-1907, however, the railroads have taken many steps to increase the efficiency of their equipment. Two years ago the official classification made a general advance of 20 to 30 per cent. in minimum weights, and last fall there was a similar but not quite so extensive general increase in the Western classification. The operating officials have learned many lessons from their disagreeable experience of three years ago. The trunk lines have abandoned the practice of breaking up and remaking all trains of dead freight at each division yard. Fast and preferred classes of freight are kept by themselves, in separate trains. Years ago they did not have enough of this freight to make full trains and they would fill them with whatever dead freight came handy at each division yard. This ancient practice had much to do with the confusion in 1906, when the old system broke down. Long haul dead freight is now made up in trains which remain intact to their destination, with mere changes of engines, and this keeps the road clear and gives the shipper better service. Vast improvements have also been made in terminal yards, and gravity switching plants have been installed at the largest terminals.

The test of present methods will come with the closing of navigation on the Great Lakes. The grain and flour traffic from the Northwest will then be thrown on the trunk lines, the new corn crop will begin to move, and in the South the cotton crop will overflow all the cars that the Southern roads can lay hands upon. The railroads now have less equipment than in the fall of 1907, as the additions since that time have not covered the loss, and a large percentage of what is now in service cannot be used on main line traffic, as the old wooden cars can no longer be mixed in trains with heavy steel cars.

The New Tariff and Iron Ore Imports.

It is to be expected that foreign trade movements will now be watched closely for signs of departures attributable to the new tariff. Consular reports will have less to say about the bad packing of goods by American exporters and more about openings here for foreign products where duties have been reduced or the protests of foreign manufacturers whose opportunities to do business in the United States may have been curtailed by the enforcement of the maximum duties. The United States Consul-General at Stockholm recently sent the following as bearing on the reduction in the iron ore duty from 40 to 15 cents a ton:

Germany has been the main customer of Sweden's iron ore, but the news of the reduction of the American duty on the crude ore has made the Swedish iron ore exporters look for a market in the United States, and already some 200,000 tons is on the way to Philadelphia. The Swedish iron (!) exporters are jubilant at the prospect of lower duties on the raw product (!) in the United States, and the prospect of German importers turning to new quarters for supplies is offset by the immediate opening of a new market in America. According to the latest freight quotations a rate of \$1.61 per ton from Lulea, Sweden, to Philadelphia was made for shipments already negotiated. Reports from Brazil speak of large new finds in that republic, but although the report of the Government of Brazil lately issued is sensational, no competition is expected from that quarter for a few years, or until the deposits there can be opened, which should take some time.

"Already" hardly describes the promptness with which the Swedish iron ore producers entered the American market, for the 200,000 tons referred to was sold to eastern Pennsylvania furnaces months before the Payne-

Aldrich tariff bill was passed. It was pointed out in the article in *The Iron Age* of September 9, reviewing the situation relative to iron ore imports, that the new tariff would no doubt be credited with developments in iron ore which really antedated it and proceeded from causes with which the iron trade has long been familiar. The reduction of 25 cents a ton in the iron ore duty, or 40 to 50 cents on the quantity of iron ore required to make a ton of pig iron, simply reinforced advantages already accruing to Eastern furnaces in buying foreign ores rather than high priced Lake Superior ores with the high rail freights from Lake Erie ports.

The London "Ironmonger" Fifty Years Old.

The *Ironmonger*, London, England, completed its fiftieth year with the close of August and celebrated the beginning of its fifty-first year with the issue of September 4. Some 32 pages of that issue were devoted to a history of the paper and a review of industrial and commercial progress in the lifetime of the journal. The paper was established by six brothers named Morgan. The pioneer of the venture was William Vaughan Morgan, the second of the brothers. The names of the others were Septimus, Edward, Octavius, Walter and Thomas, each having Vaughan as his middle name. The original partners have now been reduced to three. Thomas died in 1885, Octavius in 1900 and William in 1892. Of the three surviving original partners, the oldest is now Alderman Sir Walter Vaughan Morgan, Bart., ex-Lord Mayor of the city of London and treasurer of Christ's Hospital. The second is Septimus, who of all the brothers was perhaps most closely associated with the initiation and development of their newspaper ventures. The third is Edward, who has devoted his business life mainly to the great manufacturing concern now known as the Morgan Crucible Company, Ltd., of Battersea. We congratulate our contemporary on rounding out its half century of life and on the evidences of virility and progressiveness which are still shown in every issue.

Customs Decisions.

Fish Hooks.

The Board of United States General Appraisers has sustained the Pacific Nut & Twine Company, in a controversy with the Government regarding the rate of duty to accrue on halibut fish hooks. The hooks are made from round iron or steel wire, upon which duty was assessed at the rate of 40 per cent. ad valorem and 1½ cents per pound.

The importer alleges that the wire from which the hooks are made is valued at not more than 4 cents per pound, and that the hooks are therefore dutiable only at the specific rate named in the first part of paragraph 137, plus the 1½ cents per pound prescribed in the second proviso of the same paragraph. In his decision for the Board, General Appraiser Fischer says that the sample in evidence is a halibut hook, not smaller than No. 13 wire gauge. He states that the tribunal is satisfied from the testimony laid before it that the hooks are manufactured from wire valued at not more than 4 cents a pound. The protest is accordingly sustained.

Iron Tubes.

Unfavorable action has been taken by the Board in a protest filed by the United States Flexible Metallic Tube Company. Objection was taken to the assessment of duty at the rate of 35 per cent. on articles returned by the collector as iron tubes.

The American Railway Association's statement of car surplus on September 15 shows a decrease of 38,175 cars from the figure reported September 1. The net surplus September 15 was 68,502 cars. On January 6 of this year it was 332,513 cars, and on April 29, 1908, it was 413,338 cars, the maximum for last year.

Cincinnati Tool Makers and Foundry Contracts.

Sliding Scale Basis on Castings and Scrap.

Coincidentally with the signing on September 25 of a contract in which castings to the value of \$1,250,000 are involved, enough important deals were inaugurated that week in the Cincinnati District between and among the tool manufacturers, scrap dealers and foundrymen to constitute an important epoch in the history of machine tool making. The old material dealer is an important factor.

From time to time *The Iron Age* has referred to the system whereby tool builders purchase their castings from foundrymen on the sliding scale basis, a great number in the Cincinnati District employing that method of buying. The adoption of a uniform system of contract for the purchase of castings was strongly advocated two years ago, at a time much like the present in the tool making industry—namely, a demand for tools which exceeded the capacity of concerns to supply ready deliveries and all establishments running overtime and with enlarged forces. At that time prominent Cincinnati machine tool builders held meetings, as did some of the larger foundrymen, and a few joint sessions were arranged where the subjects of "shaving cores," "gating of patterns," "responsibility of upkeep of patterns," "sliding scale basis for buying based on changes in the pig iron market," "analysis of castings," "time limit on return of castings and price at which credit should be given," and "liability of foundries for time put in on bad castings" were considered. A number of new contracts were made, but no general plan was formed designed to govern the local group of tool makers, members of the Cincinnati branch National Metal Trades Association.

One of the largest tool makers in that district has now developed a form of contract which not only includes the sliding scale basis for the purchase of castings during its life but also provides for the sale of all scrap he accumulates to the foundryman who makes his castings, and of all borings and turnings to an old material dealer, all on the same sliding scale basis. This tool manufacturer believes that in the new form of contract with foundrymen he has found a solution of the troubles arising from disputes between the two interests involved. Embodied in the contract, which provides an adjustment of about 2½ cents per 100 lb. for castings for every 50 cents per ton change in pig iron, based on the quotations appearing in the previous week's issue of *The Iron Age*, are also clauses providing for the sale to the foundrymen of all scrap iron that may be accumulated by the machine tool maker; the contract in question covering a year. This clause reads as follows:

The party of the first part also agrees to purchase from the party of the second part all scrap iron as may be accumulated by same, under the following schedule: When pig iron is selling at \$12 the price of scrap iron will be \$9, and will advance or decline as pig iron advances or declines the same as stated in the above contract.

Iron.	Price.	Iron.	Price.
\$16.00.....	\$13.00	\$19.50.....	\$16.50
16.50.....	13.50	20.00.....	17.00
17.00.....	14.00	20.50.....	17.50
17.50.....	14.50	21.00.....	18.00
18.00.....	15.00	21.50.....	18.50
18.50.....	15.50	22.00.....	19.00
19.00.....	16.00	22.50.....	19.50

This tool manufacturer disposes of his borings and turnings to the scrap dealer on a yearly contract also. The necessity of some arrangement whereby he could be relieved of the trouble and annoyance of importunate rival scrap dealers and secure a regular market for the accumulation of borings and turnings—which are very large in this establishment—weighed upon the office mind constantly. The thought of a sliding scale contract for disposal of this product came to him after a day of bidding and bickering between rival scrap concerns and when the price apex had seemingly been reached. This contract was suggested to one of the bidders, with the result that it was promptly accepted, and within three

days the scrap buyer had visited and signed the same form of contract with three-fourths of the largest producers in the Cincinnati District, according to the statement of one interested. This contract provides settlements on the following basis:

When iron is \$15.00 the dealer shall pay for borings.....	\$6.50
When iron is 15.50 the dealer shall pay for borings.....	6.75
When iron is 15.75 the dealer shall pay for borings.....	6.87½
When iron is 16.00 the dealer shall pay for borings.....	7.00

In other words, the dealer will pay the tool manufacturer for borings according as the Southern iron market price for No. 2 foundry rises or declines, with \$6.50 the basing price for borings at \$15 for No. 2 pig iron, and in the ratio of 50 cents advance on borings to \$1 advance on pig iron. The price for turnings would increase or decline in the same ratio and the same manner on the basis of \$8.87½ when Southern No. 2 foundry is quoted at \$15.

Another and quite recent innovation introduced in the making of castings in the district has been the introduction of the specialist, the analytical expert, who shall certify to the employment of the proper mixture for the various beds, columns, bases, &c., used in machine tool manufacture. A certain steel mixture designed to produce strength, rigidity and other desirable qualities in castings was demonstrated, and the firm holding the rights for its use has contracted with one of the largest and most modern foundry institutions in the Central West to provide an expert overseer or demonstrator to turn out castings of which the new mixture is an integral and special part. The large contract mentioned in the opening paragraphs of this article is also based on the periodically required examination or audit of this company, and the foundry accepting the contract is bound to furnish castings containing this steel mixture according to the formula of the expert concern in question.

There are still in the Cincinnati tool manufacturing group some contracts between manufacturer and foundryman which provide for a price adjustment not oftener than every three months. One of these, which was entered into by the parties concerned fully a score of years ago, still exists and the tool maker maintains that it is a most satisfactory plan; that it is eminently fair to the foundryman and manufacturer alike, giving both advantages when such are to be had and making both parties equal as to any disadvantage in price. This original arrangement was based on a \$13.25 price on Southern No. 2 foundry. The castings were to be charged at a figure 5 cents per 100 lb. higher than the fixed basis for every advance of \$1 per ton in the price of pig iron, or 5 cents per 100 lb. less for every \$1 decline. The greater number of tool manufacturers employing the sliding scale basis for settlement with their foundries do so on the adjustment of 2½ cents per 100 lb. for castings for every 50 cents per ton change in pig iron. For instance, when the average quotation for spot pig iron delivered in Cincinnati is \$14, the price per 100 lb. for castings would be (for illustration) \$2.30; pig iron \$14.50, castings \$2.32½; pig iron \$15, castings \$2.35. When the average pig iron quotation is between the half and the even dollar the next higher figure for castings would apply, as, for instance, if the average quotation should be \$14.75, the castings would be billed at \$2.35, the equivalent for \$15 iron. The majority of tool manufacturers of the Central West who do not conduct their own foundries buy their castings on the general plan indicated in this last illustration.

The Bradford Machine Tool Company's Improvements.—The Bradford Machine Tool Company, Cincinnati, Ohio, manufacturer of lathes exclusively, reports a very gratifying demand for its product, its shops being operated on full time, and but for the scarcity of machine tool hands, would have its customary full force. Quite extensive additions in equipment are being made, approximating in cost about \$10,000, and a number of changes in the arrangement of the shops, also a new blacksmith and forging shop, are being made ready. A feature of interest is the fact that with the improvements made and to be made, the company finds it unnecessary to employ as many hands as in the past, the advanced methods and equipment doing away with a good portion.

Canadian Manufacturers and Protection.

TORONTO, September 24, 1909.—The thirty-eighth annual convention of the Canadian Manufacturers' Association was held in Hamilton, Ont., last week. Upward of 200 delegates from all parts of the country attended. On Tuesday, the opening day, R. Hobson, the president, delivered his address, wherein he presented in a very interesting way his own views, and, presumably, the views of the association, on a number of important matters. Speaking of trade, he said that the signs of revival were very encouraging; that the large crops supplied the substance for what promised to be a year of prosperity; that mercantile stocks entered the new crop year in a state close to depletion, and that, hence, the outlook for trade appeared excellent.

The Anti-Dumping Tariff.

A useful service rendered by the depression, he said, was its demonstration of the inadequacy of the Government's regulations to prevent the dumping upon the Canadian market of goods made in other countries. He attached no blame to the Government or to its officials for the shortcoming of the regulations, which were, no doubt, devised and carried out in good faith, but arrangements that appeared excellent theoretically did not in this case prove effectual in practice. He added:

But I know, and you all know, that in actual practice there are ways, devious and subtle, whereby these regulations can be evaded, and it follows as a matter of course that the foreigner who has a surplus production upon which he must realize, or perhaps a working force he cannot afford to let go, will quickly avail himself of these subterfuges in order to defeat the purposes of a law which he readily persuades himself is unjust in principle. Numerous instances are on record where Canadian houses tendering on important contracts have gone to considerable trouble in ascertaining the lowest ruling prices in the United States, only to find, after quoting as much as 10 per cent. lower than the lowest American price for the same class of material, that they have lost the business. And yet, upon investigation, the importation is found to be entered at customs at its fair market value. Whether it is done by means of secret rebates, or by recognizing claims for shortages, or by any one of a dozen other devices, is not for me to say. It is sufficient for us to know that it is done, and done at the very time when the protection the anti-dumping regulations are designed to afford is most urgently needed.

The only real remedy, he said, would be the adoption of a satisfactory scale of specific duties. On that point he recommended that strong representations be made to the Government, and he hoped the incoming Tariff Committee would give the business its very careful consideration.

The Surtax for United States Goods.

Referring to the new tariff of the United States, Mr. Hobson said he could find in it no evidence of a desire to cultivate closer trade relations with Canada. The average of protection, he considered, is as high as it was in the Dingley tariff. For years, he said, Canada has been unable to sell manufactured goods in the United States, except in the smallest way. If, he said, the maximum duties are brought into effect against Canada on March 31, Canadian farmers will be put on as unfavorable a footing to sell in the United States as are Canadian manufacturers. If Canada is to be penalized by the United States tariff for conceding the privilege of its intermediate duties to France and for giving Great Britain and certain other parts of the Empire the benefit of its preferential tariff, let Canada retaliate, said Mr. Hobson, by bringing into effect the surtax provision of its tariff law. This is already in force against Germany. It calls for the increase of the regular duty by the addition of one-third thereto, and may be imposed by the Minister of Customs upon imports from any country that in his view treats imports from Canada less favorably than imports from elsewhere.

Tariff Policy.

The Tariff Committee's report was discussed behind closed doors, the only information given to the press, at the conclusion of the two hours' session thereupon, being to the effect that the association had given its approval to the proposal to establish a permanent tariff commission. At the banquet on Thursday night Mr. Hendry, the newly elected president, said it was a matter of satis-

faction that the association had committed itself to the principle of tariff revision along scientific lines. He disclaimed any desire on the part of the manufacturers to profit at the expense of the rest of the community. There is usually a member of the Dominion Cabinet at the annual banquet. The minister present on this occasion was Hon. G. P. Graham, head of the Department of Railways and Canals. In his speech he said that the tariff must be one to benefit Canada. Upon that question the Government, backed up by the people, could, he said, be trusted to take a position of dignity, and not be stampeded one way or the other, no matter what any individual or any country might do. The country had been able to find new markets before and could find them again if necessary.

C. A. C. J.

An Original Avery Engine.

Prof. John E. Sweet, who is a nephew of William Avery, the inventor, has presented to the American Society of Mechanical Engineers the rotor of one of the original engines built in Mr. Avery's shop in Syracuse, N. Y., some time between 1835 and 1840. The Avery engine was a rotary engine, or turbine of the reaction type, having a hollow forged rotor in the form of two diametrically opposite arms. The arms were hung on a hollow shaft through which the steam entered, passing through the hollow arms and escaping through orifices at their ends. The *Journal* of the society, in referring to the gift, says:

"Professor Sweet states that the shaft had no metal bearings except at the extreme outer end and beyond the driving pulley; at the end of the shaft opposite the steam pipe, where the steam entered the hollow shaft, rollers were placed to take the pressure of the steam, usually 150 lb. The metal bearing referred to was in connection with these rollers. On each side of the case in which the arms revolved was a packing box in which hemp packing was used. These two packing boxes made the main bearings of the engine. A Mr. Herrick, who helped build and operate the engines, said that when slide valve engines were substituted for Avery engines no gain was made in steam economy. Trouble was had with the packing and with the cutting out of the blades at the ends of the arms. Mr. Avery refers in his notebook to a rotor 7 ft. long which ran $14\frac{1}{4}$ miles a minute."

New Publications.

Dictionary of Chemical and Metallurgical Material.—

Pages, 182, $4\frac{1}{2}$ x $7\frac{3}{4}$ in. Published by the *Electrochemical and Metallurgical Industry*, New York. Price, 50 cents.

Unlike the average trade directory, which heretofore at its best has given a thorough classification of products in certain lines, with names of manufacturers, this directory gives descriptions of different makes of apparatus and of articles used by chemists and metallurgists. For example, under "Aluminum in Steel," more than a page is devoted to the uses and effects of aluminum as employed at steel works. Under "Furnace, Electric Steel," each of the well known types of such furnaces is described briefly. There are three divisions of the book. The first deals with machinery, appliances and material; the second with measuring instruments and laboratory supplies, while the third is a professional directory. The work has been well done, and the result is a handbook that will come into quite general use.

The Carnegie Steel Company has received an order from the Pennsylvania Lines West for 16,800 Schoen pressed steel wheels for new freight equipment on cars being built this fall, and has also received an order from the Baltimore & Ohio Railroad for 8000 wheels for freight equipment and the pressed steel wheel equipment on 70 new passenger cars. These orders practically fill the Schoen steel wheel plant of the Carnegie company to its capacity for the remainder of the year.

OBITUARY.

ROBERT THORNBURG, a veteran in the newspaper field in Pittsburgh, died at his home, in that city, September 22, aged 74 years. He received his education in the public schools in Pittsburgh and at once began newspaper work, his first connection being with the *Gazette* and later with the *Dispatch* as river and market reporter. Early in its career, and for a long period, Mr. Thornburg did market report work for *The Iron Age*, but the connection ceased years ago. He leaves a widow and two daughters.

ORLANDO METCALF died September 22 at his home in Pittsburgh, aged 69 years. He was a well-known manufacturer, and was actively connected with the Verona Tool Works up to the time of his death. He was educated in Pittsburgh and started his business career by entering the employ of the Fort Pitt Foundry, which during the Civil War cast ordnance for the United States army. He remained with that company as secretary and treasurer until 1873, when he and Jacob Paul organized the firm of Paul, Metcalf & Co., now the Verona Tool Works, manufacturers of railroad tools. He leaves a widow, one son and five daughters. He was a brother of William Metcalf, now president of the Braeburn Steel Company, but for many years one of the partners in the firm of Miller, Metcalf & Parkin, operating the Crescent Steel Works in Pittsburgh, now owned by the Crucible Steel Company of America.

T. W. HARVEY, founder of the industrial town of Harvey, Ill., a suburb of Chicago, died recently at Littleton, N. H. He was a very extensive lumber merchant when he started to build Harvey in 1888. He became interested in several manufacturing enterprises there, which were unfortunate ventures. In late years he had resided in New York City.

MILG G. KELLOGG, founder and president of the Kellogg Switchboard & Supply Company, Chicago, died September 26, aged 60 years. He was born in Rodman, N. Y., and immediately after his graduation from the University of Rochester in 1870 located in Chicago, where he engaged in the manufacture of electrical appliances and apparatus. He was especially interested in the manufacture of telephones, and invented several improvements upon these and other electrical devices. Early in his career he became connected with the Western Electric Company, with which he occupied an important position at the time he founded his own corporation. He was a member of the Union League, Chicago Athletic and Kenwood clubs. He leaves a widow, one daughter and two sons.

ROBERT HOE, the third of the same name, head of R. Hoe & Co., printing press manufacturers of New York and London, died at his London residence September 22, aged 70 years. He was the descendant of two leaders in the development of printing presses. His grandfather came to this country from England in 1784, and in 1803 started to manufacture presses, establishing a business which grew to be a leader in its line. Under the management of the member of the family now deceased the printing press was pushed to greater efficiency than ever before. Many devices were adapted which have achieved important results in speed and in color printing. Outside of his inventive capacity Mr. Hoe was remarkable for his success as an organizer. He systematized his New York factory completely and possessed the art of selecting able assistants. He spared no trouble in building up a competent set of mechanics, and in this connection gave much attention to his apprentices' school. He found time to write several books on subjects connected with his life work. He leaves a widow, two sons and three daughters.

WILLIAM D. HARTUPEE, Pittsburgh, second vice-president of the Pittsburgh Plate Glass Company, and one of the foremost plate glass manufacturers in the country, died September 23 from paralysis, aged 54 years. He was born in Pittsburgh, his father being Andrew Hartupée, who founded one of the first machine glass-making companies in Pittsburgh. He was educated in the then Western University of Pennsylvania, the Massachusetts

Institute of Technology and the University of Karlsruhe, Germany, in all of which he studied mechanical engineering. At the time of his death he was active in the Pittsburgh Valve & Fittings Company, Barberton, Ohio, and a number of other enterprises. He leaves a widow.

GUY A. SOMERS, Brooklyn, N. Y., died September 26, aged 67 years. He was born in Fairfax County, Virginia, but had lived in Brooklyn since 1862. For many years he was a member of the firm of Somers Brothers, manufacturers of tin boxes and cans, and for a time manufacturers of tin plates. He leaves a widow, a son and six daughters.

PERSONAL.

F. H. Banbury, engineer of the Acheson Oildag Company, Niagara Falls, N. Y., sailed for Europe September 25, in the extended patent interests of that company. He will first go to Genoa, Italy, later visiting other countries to establish the Oildag process of lubrication, as demand makes necessary.

Paul C. Kuegle has resigned his position as chief inspector of the Youngstown Sheet & Tube Company, Youngstown, Ohio, to take effect October 1. He expects to sail from New York October 9, with his destination as Sakchi, India, where he will be employed as chief inspector of construction and general yardmaster for the Tata Iron & Steel Company, Ltd.

P. P. H. Conover, secretary of the Miami Valley Machine Tool Company, Dayton, Ohio, who has just returned from a business and pleasure trip to Europe, is spending a few days in New York visiting the machinery trade. He expects to return to Dayton the latter part of the week.

Jason Page, formerly connected with the American Bridge Company in the contracting department, Chicago office, is now engaged in the sales department of the Carnegie Steel Company. He has been succeeded in his position as contracting agent for the American Bridge Company by Vernon C. Ward, Jr.

Hermann Riecke, representing the Vienna branch of Schuchardt & Schutte, Berlin, Germany, who has been making a tour of the leading machinery centers, including Pittsburgh, Cincinnati, Chicago, Madison and Milwaukee, will sail for Europe from New York October 7.

W. M. Corse, secretary and treasurer of the American Brass Founders' Association, now residing at Detroit, Mich., announces that after October 1 his address will be in care of the Lumen Bearing Company, Buffalo, N. Y. He has accepted the position of works manager for this company, which makes lumen bronze, manganese bronze castings, aluminum castings and the ordinary run of red brass jobbing work.

James Douglas, New York, has prepared an exhaustive paper on "The Influence of the Railroads of the United States and Canada on the Mineral Industry," for a meeting of the Institution of Mining and Metallurgy to be held in London, October 21, 1909. The paper makes a pamphlet of 52 pages.

A. B. Hiler, formerly manager of the screw machine department of the Edison Phonograph Company, Orange, N. J., has joined the sales force of Jones & Lamson Machine Company, Springfield, Vt.

H. H. Stock has resigned as Editor of *Mines and Minerals*, and has accepted the chair of mining recently established at the University of Illinois, Urbana, Ill.

J. H. P. Wharton, formerly of the sales department of the La Belle Iron Works, Steubenville, Ohio, has been made assistant manager of sales of the Republic Iron & Steel Company, with headquarters at Pittsburgh. He will devote his attention exclusively to the handling of the tubular products which the company will soon be making.

Walter Wood of R. D. Wood & Co., Philadelphia, has returned from Europe. He attended the recent meeting of the International Society for Testing Materials at Copenhagen.

Trade Publications.

Generators and Synchronous Motors.—Wagner Electric Mfg. Company, St. Louis, Mo. Bulletin No. 87. Discusses to considerable detail and in simple language the construction and characteristics of the Wagner revolving field alternating current generators and synchronous motors. Features particularly dealt with in regard to the generators are capacity, wave form, regulation, efficiency and ability to operate in parallel with other generators.

Drill Grinding.—The Cleveland Twist Drill Company, Cleveland, Ohio. Booklet. Contains reprints from shop operation sheets issued with *Machinery* for June, 1909, demonstrating the proper way to grind flat and twist drills. Also illustrates and explains the use of the Cleveland model drill point, which serves as a guide for the proper regrinding of drills.

Wire Products.—Youngstown Sheet & Tube Company, Youngstown, Ohio. Folder. A standard wire and wire nail card listing all kinds of wire nails, brads, staples and barbed and coated wire.

Steam Specialties.—Warren Webster & Co., Camden, N. J. General catalogue, Part VIII, 6 x 9 in., 80 pages. Especially calls attention to the steam specialties made by this company other than used in connection with the Webster system of steam circulation for heating. While the Webster system is briefly referred to, more space is given to air washers and humidifiers, feed water heaters and purifiers, steam and oil separators and smaller steam specialties such as damper regulators, vent valves, regulating and preference valves, thermostatic traps, grease and oil traps, expansion joints, suction strainers, &c.

Industrial Railroad Equipment.—Ernst Wiener Company, 50 Church street, New York. Catalogue No. 200, 6 x 9 in., 132 pages. Covers a very complete line of industrial railroad equipment, including rails and their accessories, portable and permanent tracks, switches, frogs, crossings, turntables, transfer cars, steel and wooden cars of all kinds, locomotives, &c. In connection with instructions for ordering, useful information is given, such as tables of rails and fastenings required for one mile of single track, tables of weights of dimensions of tracking and cars, &c. The catalogue is fully illustrated and is printed in both Spanish and English.

Molding Machinery.—Herman Pneumatic Machine Company, Union Bank Building, Pittsburgh, Pa. Contains an illustrated description of the construction and use of the Herman jarring molding machine, with turn over and pattern drawing device. This machine is operated by compressed air and is of especially strong construction. Ladle carriers and roll overs are also briefly referred to.

Steel Plate Construction.—William B. Pollock Company, Youngstown, Ohio. Supplement No. 15 to a general book of views of modern blast furnaces constructed by the company. This one shows views of the new stoves of the Brier Hill Iron & Coal Company, at Youngstown, Ohio.

Electric Lighting Equipment.—Adams-Bagnall Electric Company, Cleveland, Ohio. Bulletins and binder. Includes all of the company's bulletins up to No. 79, published March 16, 1909. The latter shows the regenerative flame lamp, which produces a light claimed to be the nearest approach to daylight in color of any artificial illuminant. In this lamp the carbons are placed vertically, one above the other, and inclosed in double globes, the inner globe being clear and the outer opalescent.

Recording Thermometers.—Bristol Company, Waterbury, Conn. Bulletin No. 111. Describes recording thermometers especially adapted for taking feed water temperatures and similar applications. Comparative record charts are included demonstrating the uniformity of operation secured through the use of this thermometer under certain circumstances.

Metallic Packing and Leak Stopping Compound.—H. W. Johns-Manville Company, 100 William street, New York. Two folders. One describes metallic packing, which is made of especially treated soft gray cast iron for use on stationary and marine engines, gas engines, locomotive pumps, &c., and the other folder treats of an anti-leak stick which is a tough rubbery compound useful for stopping leaks in tin, iron, steel, slate, &c.

Machine Tools.—W. F. & John Barnes Company, Rockford, Ill. Catalogue No. 69, 6 x 9 in., 72 pages. Largely given over to the description of upright drills, from an 8-in. bench friction disk drill to a 50-in. powerful upright drill with self-feed and automatic stop. The range includes drills with lever and worm feed and others with lever feed only; drills with and without tapping attachments. The application of the Barnes drills in gangs with 2, 3 and 4 and even 10 spindles is shown. Several types of horizontal radial drills are also illustrated, and emery grinders, an adjustable screw press and smaller accessories.

Valves, Fittings and Appliances.—Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, Pa. Catalogue, 6 x 9 in., 516 pages, cloth binding. This supersedes all previous catalogues and price-lists issued by this company and is a very complete volume of all kinds of valves, fittings and appliances used in steam, gas, water, air and hydraulic piping systems. In-

teresting views of the company's large plant are shown in the front of the book, together with illustrations of a number of large power plants where the company's equipment has been installed. Some unusually large expansion bends and some heavy valves of a number of types are illustrated. In the latter half of the book are general dimensions of the goods listed useful to the draftsman or engineer in laying out piping systems.

Garage Equipment.—Marshall & Huschart Machinery Company, Chicago, Ill. Catalogue G, 9 x 12 in., 151 pages, cloth binding. This is a well arranged publication showing machinery and supplies to equip an up-to-date garage for all sorts of automobile repair work and construction. Views of the company's offices and stock rooms are shown and there follow illustrations and specifications of Lodge & Shipley, Von Wyck, Sebastian, Greaves-Klusman and National engine lathes, Cincinnati upright drills, Rockford drills, Bickford radial drills, Cincinnati universal milling machines, Rockford crank shapers, Cincinnati planers, Colburn key seaters, Ransom grinders, &c. Each machine illustrated is given a page of descriptive matter.

Scrap Shears.—J. Arthur Meeks, Muncie, Ind. Folder. Describes briefly the Meeks No. 2 low-housed double geared scrap shear, which has a cast iron jaw, 1½-in. throat and 4½ in. at the outer end of the knife. The shear weighs complete about 6000 lb. and is arranged to cut 1½-in. round and 1¼-in. square stock.

Smooth-On Iron Cements.—The Smooth-On Mfg. Company, 572-574 Communipaw avenue, Jersey City, N. J., has just brought out for free distribution the eighth edition of its instruction book. This book is fully illustrated and shows many of the different ways in which the Smooth-On cements have been used.

Boiler Water Purification.—The William B. Scaife & Sons Company, Pittsburgh, Pa. Pamphlet, 16 pages. Reprint from the *Proceedings* of the Scranton Engineers' Club, June, 1909, of a paper on "Scaling and Corroding Substances and Their Elimination from Water for Boilers," by J. C. William Greth.

Castings.—Buffalo Foundry Machine Company, Buffalo, N. Y. Booklet. Uniquely arranged as a bank book with a check inserted to indicate the profit that might be made from using the company's line of castings, and it contains arguments that money is thrown away by machining defective castings. Views of the company's plant are given and attention is called to the fact that it makes a general line of castings to order, including special large castings, such as heavy engine cylinders and the like.

Garage Equipment.—Marshall & Huschart Machinery Company, Chicago. Catalogue G, volume 1, 1909, 9 x 12 in., 151 pages, substantially bound in cloth board covers. Contains illustrations and descriptions of machine tools designed to interest purchasers of equipment for garage repair shops. Full mechanical data is given on all the various styles and kinds of machines shown, which include engine lathes, upright and radial drills, universal and plain milling machines, crank shapers, grinders, &c.

Drying in Industrial Plants.—Green Fuel Economizer Company, Matteawan, N. Y. Bulletin No. 128. Describes a new method for calculating what drying equipment is necessary for industrial plants. The book describes the elementary theory of drying and describes various methods of drying used in textile plants, leather plants for tanneries, thread dryers, laundries, baking powder dryers, &c., and gives an original method for calculating the amount of air and steam required for drying a given material under prescribed conditions. The book should be of interest to manufacturers who have drying work to do, and it refers briefly to the Green fans and heaters designed for such uses.

Flexible Transmission.—Coates Clipper Company, Worcester, Mass. Bulletin No. 22, 6 x 8½ in., 68 pages. This shows the various uses to which the Coates flexible shafting can be adapted. This is a unit link flexible shaft made on the square spheroid principle, or, as the catalogue aptly terms it, a mongrel square drive. The square drive at one end fits in its corresponding socket at the other end, and it is so shaped that a universal joint is obtained. A groove is cut in the end of each socket, and when the square end is introduced a spring split ring is inserted which retains the units and keeps them from pulling apart. The shaft is shown in use with motor drills, rail drills, stove polishers, floor scrubbers, chipping hammers, wood borers, furniture polishers, &c. Carborundum wheels and other attachments for use with the shafting are shown.

William H. Mitchell announces that as the firm of Buell & Mitchell was dissolved September 15 he has formed a new firm with Alexander Bonnell Tappen under the style of Mitchell & Tappen, with offices at 120 to 122 Liberty street, New York, as contractors in steel and iron. Mr. Tappen is a mechanical engineer, a graduate of Cornell, was formerly vice-president of the Consolidated Water Company, Utica, N. Y., and has been in close touch with a large volume of heavy construction work.

The Virginia Iron, Coal & Coke Company.

The annual report of the Virginia Iron, Coal & Coke Company for the year ending June 30, 1909, shows gross earnings of \$3,000,059, a decrease of \$928,562. Operating expenses, however, were smaller by \$647,075, which left net earnings of \$198,080, a decrease of \$281,487. After allowing for charges, taxes, &c., there is a deficit of \$311,730, against a surplus in the previous 12 months of \$117,945. Following is the condensed income account of both years:

	1909.	1908.
Gross earnings.....	\$3,000,059	\$3,928,621
Expenses	2,801,979	3,449,054
Net earnings.....	\$198,080	\$479,567
Other income.....	71,135	97,140
Total income.....	\$269,215	\$576,707
Charges, taxes, &c.....	580,945	458,762
Deficit.....	\$311,730	*\$117,945

* Surplus.

President Henry K. McHarg says in his accompanying remarks:

"Most of the year we had only two furnaces in blast, and our total product for the year ended June 30, 1909, was 119,659 tons of coke iron and 3899 tons of charcoal iron. We delivered during the year but 23,215 tons of coke iron and 2477 tons of charcoal iron, so that, including the amount on hand July 1, 1908, we had, of both coke and charcoal iron, on July 1, 1909, 157,594 tons. We mined during the year 832,025 tons of coal, and made during the year 224,707 tons of coke. The iron is carried at cost on our books, and at present prices would very nearly cover the entire loss which we have shown for the year.

"Taking the pig iron on our yards at cost and the changes in assets and liabilities from our balance sheet, which is shown in this report, we have practically lost no money, if our investment in the way of improvements to real estate and plant has been wisely made. We have accomplished during hard times some economies which, considering the reduced product and increased number of idle plants, reflect great credit on our men.

"Our cost of producing pig iron during the past 12 months was \$1.50 per ton less than in the previous year. The cost of mining coal was 4 cents a ton less, the cost of producing coke was 8 cents a ton less, and the cost of quarrying limestone 18 cents a ton less than the year before. The cost of mining ore was greater during the past 12 months by 17 cents a ton than the previous year, due largely to the nearly worked out condition of several of our oldest mines.

"We have retired by purchase this year four first mortgage Virginia Iron, Coal & Coke Company 5s, costing \$3900, and 16 Carter Coal & Iron Company bonds, costing \$16,780.

"I regret to say that the owners of the Marion & Rye Valley Railway Company were unable to complete their financial arrangements and extend the line into Ashe County, North Carolina, so that at present our Ballon properties are not available for furnishing ore to our furnaces.

"We have spent funds liberally in improving our furnaces, coal mines and all property during the past year, and we have had specially good results from the large expenditure made for the improvement of the Radford Furnace, that furnace making iron at lower figures, I believe, than any other furnace in the State of Virginia, and considering the difference in freight rates, nearly at the low figure for producing iron in the Birmingham District."

The Sharon Steel Hoop Company's Extensions.—

The Sharon Steel Hoop Company, Sharon, Pa., has placed a contract for structural steel buildings with the Pittsburgh Bridge & Iron Works, Rochester, Pa., comprising a 60-ft. extension to the present open hearth building, a 12-ft. extension to its leanto, a 75-ft. extension at one end of the bar mill and a 43-ft. extension to the other end, where it is 84 ft. wide. A new 35-ton basic open hearth furnace and three bar heating furnaces are to be added by the company's own organization, which will give it

four acid and two basic open hearth furnaces and increase its capacity in billets or sheet bars about 2000 tons per month. During the past year the Sharon Steel Hoop Company has been making corner bead for fireproof construction, and has lately added a new building in which it is now turning out studding. These fireproofing materials are being marketed by H. T. Gilbert, general sales agent of the company's Chicago office, and arrangements are now being completed to sell these products in the Western and Southern sections of the country. The hoop and band department is being operated to full capacity, with excellent prospects for the future.

Rolled Ornamental Iron Shapes.

Fritz Rauth, P. O. Box 2049, New York City, is anxious to introduce into this country a new industry in the manufacture of rolled ornamental iron shapes. He makes the following statement:

"Ornamental sections of rolled iron have been imported into the United States, Canada and South America in very large quantities, the principal source of supply being Germany. A very small number of French and Belgian manufacturers have tried to roll ornamental shapes, but their ideas have been imperfect. It is understood that some American manufacturers have given a little attention to this matter, but they have been working in the wrong direction. One had the idea of cutting the rolls out with acid, while another attempted to cast the embosses in the rolls at the time they were cast, while a third sought to cut them out on the rolls. The result in every case has been an indistinct design, which naturally was of no commercial value.

"The only manufacturer who at the present time supplies the proper material in this line is a German company. As an excellent demand is found in this country, a profitable business can be obtained in making ornamental rolled iron here, and I desire to bring this subject to the attention of interested parties. The freight rate and duty will be saved, and the material put on the market cheaper, while a very satisfactory profit appears to be assured. Ornamental iron in this form is used in making bank inclosures, cemetery railings, hand rails, stair-case railings, gates and hundreds of other things. What is now needed is to introduce modern shapes. A manufacturer having no competition will, of course, not expend money in creating new shapes, as he finds a satisfactory market in continuing to sell the designs he has always made. A very large demand exists here for the so-called Grecian patterns, especially on the Pacific Coast, and many other patterns are wanted throughout the country. A rolling mill turning out light sections would easily be able to employ 1000 hands to meet the increasing demand. To make a start, it would, of course, be desirable to confine designs to popular patterns. I am able to show how this is done."

Panama Scrap Bids Rejected.

WASHINGTON, D. C., September 28, 1909.—All the proposals made for the purchase of the scrap iron, steel, brass, copper, &c., left by the French company on the Isthmus of Panama have been rejected by the War Department. The bidders and their proposals appeared in the issue of *The Iron Age* of September 23, page 934.

No reason is given at the War Department or at the office of the Isthmian Canal Commission for the rejection of the bids, but it is unofficially stated that Colonel Goethal, chief engineer of the commission, believed that the prices submitted were too low. It is stated, however, that the chief engineer and the Secretary of War conferred about the matter and Colonel Goethal recommended that the bids be rejected, and the Secretary of War accordingly issued an order to this effect.

It is believed that this old material will be sold in New York piecemeal, and will be transported there as ballast by the steamships belonging to the Isthmian Canal Commission. Its officials believe that in this way a sum equivalent to what they think it is worth will be obtained.

W. L. C.

NEWS OF THE WORKS.

Iron and Steel.

Hamilton Furnace of the Hanging Rock Iron Company, Hanging Rock, Ohio, which went out for repairs in June, is again in blast.

Union Furnace of Rogers, Brown & Co., at Ironton, Ohio, will probably be blown in about October 1.

In a recent item in these columns concerning the improvements made to Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, it was erroneously stated that molten metal was to be furnished to the Bessemer steel plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio.

The Oliver Iron & Steel Company, Pittsburgh, reports that it is operating its plant to nearly full capacity and that its business is about normal, while future prospects are excellent. The company manufactures picks, mattocks, grub hoes, pole line material, rivets, bolts of various kinds, &c.

At the annual meeting of the stockholders of the La Belle Iron Works, Steubenville, Ohio, held in Wheeling, W. Va., September 15, former directors were re-elected as follows: A. H. Woodward, D. J. Sinclair, Isaac M. Scott, George Greer, W. D. Crawford, N. E. Whitaker, H. C. Franzheim, W. H. Hearne, J. J. Holloway, Edward Hazlett and W. S. Foltz.

At a recent meeting of the directors of the Youngstown Sheet & Tube Company, Youngstown, Ohio, the following officers were elected: James A. Campbell, president; H. G. Dalton, first vice-president; C. S. Robinson, second vice-president; George E. Day, secretary; Richard Garlick, treasurer.

The receiver's sale of the plant of the Refined Iron & Steel Company at Anderson road and the Pittsburgh & Lake Erie Railroad, near Pittsburgh, which was adjourned on September 1 because of lack of bidders, is set for October 4, on the premises. Meyer Strong, Northside, Pittsburgh, is the receiver.

The West Penn Steel Company, Pittsburgh, is making arrangements to place in operation the open hearth and bar mill departments of its new plant at Brackenridge, Pa., this week, and will probably commence operations in its sheet mill department next week, the machinery having been installed and tried out ready for operation.

General Machinery.

The Rosedale Foundry & Machine Company, Northside, Pittsburgh, has received a contract from the Government for 40 large operating valves for the Gatum and San Miguel locks, Isthmus of Panama. Shipment of these valves will be made late this year and early next year.

The Board of Fire and Water Commissioners of Kansas City, Mo., will receive bids until October 21 for a 25,000,000-gal. centrifugal pump, direct connected to a vertical crank and fly wheel cross compound condensing engine, for the Quindaro pumping station, Quindaro, Kan.

George De B. Myers has been appointed receiver for the Cunningham Machinery & Mfg. Company, Philadelphia, Pa.

An electric hoist, stamp battery and air compressor are required by the Minnie-Belle Mining & Development Company, Wenden, Ariz.

The Missouri Car Company, St. Louis, Mo., has decided upon a large extension of its plant. Electrical machinery and some new tools will be among the primary requirements.

The Low Moor (Va.) Iron Company is adding to its electrical apparatus.

Additional air compressors, to be motor driven, will be purchased by the Daly-Judge Mining Company, Park City, Utah.

The Ray Consolidated Company, Calumet, Mich., has had plans prepared for a 500 ton crushing and ore reduction plant.

The Spaulding Mfg. Company, Grinnell, Iowa, will construct a new factory about 70 x 250 ft., equipping it with modern wood and metal working machinery for vehicle manufacture.

The name of the Rockford Well Drill Company, Rockford, Ill., has been changed to the Rockford Iron Works.

The Noequal Door Company, Manhattan, N. Y., has been organized to manufacture refrigerator doors. Machinery requirements will include light tools and metal cutters.

The Arkansas City Portland Cement Company, Arkansas City, Kan., has decided upon the purchase of crushing equipment to include two No. 6 gyratory breakers, elevator, screens, &c.

The Engineers' Specialty Company, Kansas City, Mo., has been incorporated to manufacture various power plant auxiliaries. J. G. Brinkman, Great Bend, Kan., heads the enterprise.

The Keck-Gonnerman Company, Mount Vernon, Ind., manufacturer of engines, boilers, threshers, sawmills, &c., is constructing a three-story brick addition to its factory 36 x 90 ft., also a new boiler house and garage 70 x 80 ft. The new equipment being installed includes two 125-hp. Babcock & Wilcox water tube boilers, a 34-ft. span 5-ton electric traveling crane and a Norwalk air compressor with a capacity of 1380 cu. ft. per minute.

A number of important improvements are under way or con-

templated for Sapulpa, Okla. There are under construction in that city a brick plant to cost \$100,000, packing plant to cost \$500,000, foundry and machine shop to cost \$50,000 and a rolling mill to cost \$500,000. The Sapulpa Light & Power Company is spending \$50,000 in improvements, and the city is making improvements to the streets which will cost \$350,000. The Frisco Railroad, which has three division points in the city, contemplates the expenditure of over \$500,000 in the construction of new shops and roundhouse, and the Sapulpa & Interurban Railroad is spending \$250,000 in extension of its tracks.

It has been decided to incorporate the Villinger Mfg. Company, with a capital stock of \$20,000, to take over the business now being conducted by W. E. Villinger at 643 Elmira street, Williamsport, Pa. A charter will be applied for and the new company will extend the business of manufacturing special machinery, dies, tools, &c., and the making of inventors' models and specialties. The Board of Directors for the first year will be composed of Howard T. Janney, president; H. A. Villinger, vice-president; J. W. Villinger, treasurer; W. E. Villinger, assistant treasurer, secretary and general manager; J. M. Rook and B. E. Maule.

The Detroit Stoker & Foundry Company, Detroit, Mich., will add to its equipment for motor drive.

A new hoisting plant is to be purchased by the Maverick Copper Company of Superior, Wis.

Air compressors, power equipment, crushers, &c., are to be installed within a month or two by the Gold King Mining Company, Crown King, Ariz.

An air compressor, hoist and crushing machinery will be needed shortly by the Madezelle Mining Company, Prescott, Ariz.

The R. & H. Simon Company will need a line of 15 to 20 direct current motors for its plant at Union Hill, N. J.

The Standard Bridge Tool Company, Ferguson Building, Pittsburgh, announces that the slight explosion in its building will not in any way interfere with its business, and that it is prepared to name prices on Thomas spacing tables, laying off machines, punches, &c., and in general conduct its affairs in a prompt and satisfactory manner to its present and prospective customers.

The Hohn Cement Machinery Company has been incorporated at Indianapolis, Ind., with \$20,000 capital stock, to manufacture cement machinery. The directors are Arthur H. Byfield, Charles W. Byfield and Fred C. Hohn.

Charles Latchem is at the head of a company being organized in Wabash, Ind., to build a machinery manufacturing plant. It is to have \$30,000 capital stock. William Stewart, architect, Wabash, is preparing plans for the plant, which will include a main building, 40 x 200 ft., and a boiler room, 20 x 30 ft.

Foundries.

The Sharon Foundry Company, Sharon, Pa., has enough orders on its books for steel castings from rolling mills, &c., to insure its operating to about full capacity for some time ahead.

Receiver A. V. Brock has been directed by the court to sell the property of the Beaumont Iron Works, Beaumont, Texas, at public sale December 7.

The Atlas Brass Foundry Company, Columbus, Ohio, will erect a two-story brick addition to its plant.

The foundry, machine shop and pattern shop of the Sedro-Woolley Iron Works, Sedro-Woolley, Wash., were recently destroyed by fire, entailing a loss of about \$36,000. A temporary building for present occupancy will be constructed and work on permanent buildings will be begun in the near future.

Power Plant Equipment.

The Bettendorf Improvement Company has secured franchises from the Village Board of Bettendorf, Iowa, for the installation of electric light and water works plants. Work on the electric lighting system is to be started within three months and to be completed within six months, and the water works plant is to be finished and in operation within 12 months. The village has also authorized the construction of a sewer and septic tank. J. W. Bettendorf of the Bettendorf Axle Company is president of the Bettendorf Improvement Company.

H. B. Chapman, Woodstock, Va., has purchased a site on the Shenandoah River, about 2 miles from Woodstock, where he and others will develop a hydro-electric plant to furnish power and light for the city. A 15-ft. dam, 450 ft. long, will be constructed. The plans for the work have not yet been completed.

The contract for the installation of a power, heating and ventilating plant for the Fifth District Normal School, Marysville, Mo., has been let to McMahon & Co., Kansas City, Mo., at \$50,000.

An electric power plant will be built at Farmington, Utah, by the Salt Lake & Ogden Railroad, which already has a generating station in process of construction at Lagoon, Utah. The Falkenau Construction Company, Chicago, is credited with having prepared the plans.

The Louisville Street Railway Company, Louisville, Ky., has started work on the construction of a new power house which

will involve an expenditure of over \$70,000. The new building will be 60 x 110 ft. and will be equipped with about \$50,000 worth of modern machinery. It is understood that the company has under consideration other important improvements, plans for which have not yet been fully perfected.

A new power plant of 7500 kw. capacity will probably be built at Venice, Ill., by the Illinois Traction Company. The details have not yet been worked out.

Three vertical tubular boilers, a Corliss engine and electric generator are required for the new municipal power plant at Columbia City, Ind. Machines up to 500 hp. capacity may be installed.

A low pressure turbine of 1200 to 1500 kw., to operate on exhaust steam, will be added to the power plant of the Diamond Rubber Company, Akron, Ohio.

A hydro-electric plant of about 1000 hp. will be constructed at Jewett City, Conn., for the Ashland Cotton Company. The initial installation will comprise a 500-hp. turbine, generator and induction motors for operating the mill.

Work on a power plant for the Ford Automobile Company, Detroit, will probably be started this winter.

New electric railway lines, for which rails and other track material, line construction, power house machinery, substation apparatus and car equipment will be required within the next few months, are the Tum Tum Mt. Railway, Vancouver, Wash.; Mt. Pleasant, Donegal & Somerset Electric Railway, Connells-ville, Pa.; Sonoma & Lake County Railroad, Santa Rosa, Cal.; Oakland & Tidewater Railway, Portland, Ore., and the Des Moines & Sioux City Railway.

One of the most notable hydro-electric power projects in the Northwest, for the reason that it will be purely an industrial enterprise, is the decision reached by the Oregon Iron & Steel Company, Portland, Ore., to build a large generating station at the outlet of Tualatin Lake for supplying power to its own works at Oswego, Ore., and surrounding industries. The machinery requirements have not yet been worked out.

Boilers, engine and electric generator will be required for a municipal power plant at Minneapolis, Minn., if the plans now under consideration are adopted. It is proposed to utilize the waste heat from an incineration plant.

Plans for the new power house and water system of the Livingston Water Works & Electric Light Company, Livingston, Mont., include a motor operated centrifugal pump of 1,500,000 gal. capacity. Work on the building has begun.

S. Pigaglio, Mandeville, La., will erect an electric power and lighting plant.

The new municipal electric power and pumping plant at Vallier, Mont., to which reference was recently made in this paper, will include a high lift pressure pump and an engine driven generating unit of 125 to 150 kw. capacity.

The steam generating equipment of the Illinois Light & Traction Company, Streator, Ill., is being extensively remodeled.

The National Conduit & Cable Company, Hastings-on-Hudson, N. Y., will install a new steam turbine and condensing plant of 1000 hp., with auxiliary machinery.

A new steam driven electric unit is to be added to the plant of the Arizona & Michigan Mining Company, Globe, Ariz.

Fires.

The plant of the Tips Foundry & Machine Company, Austin, Texas, was burned September 11, the loss being about \$50,000. It is understood that considerable machinery was destroyed by the fire and that the plant will be rebuilt.

The power house of the Crowley Electric Light & Water Works, Crowley, La., was burned September 18, the loss being about \$15,000.

One of the main buildings of the American Axe & Tool Company's plant at Beaver Falls, Pa., was burned September 17 with a loss of about \$100,000.

Hardware.

The Brandt Mfg. Company, formerly located at Chisago City, Minn., has moved its plant from that place to Hastings, Minn., where a suitable factory building has been secured affording facilities for doubling its capacity.

The Houston Mfg. Company, Rockford, Ill., capitalized at \$10,000, has been formed to manufacture vacuum cleaning devices. The officers of the company are C. S. Brantingham, president; E. P. Lathrop, vice-president, and F. K. Houston, secretary and treasurer.

The Appleton Wire Works, Appleton, Wis., is preparing to erect a two-story plant building, 40 x 100 ft., of brick, with slate roof and concrete floors. This building will be equipped with looms and machinery built from the company's own plans and patterns.

The Cassady-Fairbank Mfg. Company, 6106-6130 La Salle street, Chicago, Ill., is just breaking ground for a substantial addition to its plant, which will occupy 58 x 200 ft. on La Salle street and 50 x 164 ft. at the end of the La Salle street portion of the works. The addition will be four stories high and thoroughly up to date. The company manufactures hardware specialties, steel stampings and automatic machine work.

The Dover Stamping & Mfg. Company, Cambridge, Mass., is just finishing two additions to the plant which will materially increase the output. The company states that business is now as large as at any time in the past and that there has been a full recovery from the depression of a year since.

Miscellaneous.

The Western Stoneware Company, Monmouth, Ill., has under construction and in contemplation a number of improvements to its various plants, which will include the substitution of electricity for steam as a motive power in plants one and two at Monmouth. A new flower pot machine with capacity for 100,000 flower pots daily is being installed at No. 4 plant, Macomb, Ill., where other kilns are being added. Plant No. 5, at White Hall, Ill., will be equipped for burning oil in the kilns. The company is also contemplating the erection of three new plants at different places in the country, in addition to the seven, with a capacity of 5000 cars per annum, now owned and operated.

The Pressed Steel Car Company, Pittsburgh, is making repairs and improvements to its steel car plant at Woods Run, Pittsburgh, but it has not been decided when this plant will be started.

S. S. Dunmeyer, who conducts a general machine and repair shop at 820 Wood street, Johnstown, Pa., is erecting an addition to his plant, consisting of a frame building about 38 x 75 ft., to be fitted as an automobile department and equipped with stamping machinery for the manufacture of shade and curtain holders and other pressed work. The new department will be ready for operation about October 20.

The Tuthill Spring Company, Chicago, Ill., feeling the necessity of additional room to take care of its increasing business, has added to its 200 ft. of frontage on Polk street 50 ft. to the west, on which it is the intention to erect a new building.

The firebrick plant of the Harbison-Walker Refractories Company, at Wylam, Ala., will be ready for operation in about 30 days. It will turn out something like 40,000 brick per day. Raw material is already being assembled.

The Detroit Wire Spring Company, Detroit, Mich., which is building a new factory, 81 x 200 ft., intends erecting another building of about the same size as soon as it is completely settled in the new structure. When the new plant has been completed the company claims that it will have the largest cushioned spring plant in the world, catering exclusively to the manufacture of automobile cushions.

Edward M. Goding has been appointed receiver for the American Automobile Engine Company, Boston, Mass., which was petitioned into bankruptcy by creditors, whose claims amount to about \$30,000.

The Good Roads Machine Company, Shelbyville, Ind., has been incorporated with a capital stock of \$10,000 to manufacture road machines. The directors are Frank Glessner, Orlando E. Hayworth and John J. Burns.

The Elkhart Motor Car Company, Elkhart, Ind., has increased its capital stock to \$200,000. W. W. Stirling is president.

The Wheelchel Electric Company, Anderson, Ind., has been organized with a capital stock of \$25,000 to manufacture electrical supplies. The directors are Bert Wheelchel, I. W. Jones, A. S. McCall and John Rickes.

The Indianapolis Corrugating Company, Indianapolis, Ind., is building a two story frame addition to its factory, at a cost of \$6000.

The Thomas Wonder Auger Company, Evansville, Ind., has been incorporated with a capital stock of \$10,000 to manufacture coal mine augers. The directors are M. E. Thomas, H. R. Fink and Adolph P. Schrader.

The Indiana Auto Parts Company has been incorporated at Marion, Ind., with \$75,000 capital stock to manufacture automobile parts. The directors are G. R. Stewart, J. D. K. Kennedy, Richard Ruddell, H. D. Reasoner and F. C. Stephenson.

The Glascock Brothers Mfg. Company, Muncie, Ind., which now manufactures novelties, is preparing to erect a new factory building and will add to its line the manufacture of automobile bodies.

The Republic Elevator & Machine Company has been incorporated at Rochester, N. Y., with a capital of \$30,000, to manufacture elevators, machinery, tools, &c. The incorporators are F. A. Stoffel, G. H. Fagan and H. L. Morgan.

The Flint Sanitary Mouthpiece Company, Saranac Lake, N. Y., has been incorporated with a capital stock of \$25,000 to manufacture telephone, telegraph, musical and surgical instruments. The incorporators are B. B. Flint, G. A. Rutherford and A. K. Botsford.

The Detroit Fuse & Mfg. Company, Detroit, Mich., is receiving bids on a two-story brick and steel factory building, 40 x 170 ft., which it will erect at Rivard street and Piquette avenue.

The Clark Motor Car Company, Shelbyville, Ind., has been incorporated with a capital stock of \$150,000 to manufacture automobiles. The incorporators are G. B. Slaymaker, Arthur Woodward, J. D. Clark, J. W. Lovett, A. J. Thurston, J. H. Akers and Harry Teal. The company is to get a cash bonus of \$25,000 and a three-acre site from the city for its plant.

The Iron and Metal Trades

Additional sales of steel rails for 1910 delivery have been made during the week, the Pennsylvania system placing 200,000 tons, the allotment of which to the different mills is being withheld. Some confusion has been caused in this movement through the fact that many railroads decline to allow the mills to announce the names of their customers, so that the practice is growing of stating simply aggregates of business closed. This is leading to some duplications, so that the volume of sales may be exaggerated. Thus the St. Paul road is specifically stated to have just purchased 75,000 tons, a quantity which there is reason to believe had been already included in former totals. The Northern Pacific has bought from the Lackawanna Company 10,000 tons for early delivery, one-half the quantity being titanium rails. There have also been sold for export 12,000 tons to the Mexican extension of the Harriman system. The pig iron markets have been quite active in some sections, while in others buyers are halting in view of the rapid advance. In New England a small group of founders have bought about 25,000 tons for next year, one Connecticut plant taking 15,000 tons. There have been heavy sales in the Buffalo district, including one lot of 8,000 tons of basic pig. Southern furnaces that had advanced their price to \$14.50, for No. 2, for next year's delivery, appear to have met so prompt a response that the leading makers are now naming \$15, which, however, has not yet been established. A Youngstown interest has taken close to 30,000 tons of standard Bessemer for delivery during the first half of 1910 at the reported price of \$18, Valley furnaces.

There are conflicting reports as to the extent to which ordinary iron has been contracted for on American account in the Middlesbrough market, some authorities claiming that quite a large tonnage has been placed. It cannot be traced to any buyers here.

There has been marketed about 20,000 tons of foreign spiegeleisen, of which 12,000 tons went to one steel company and 8000 tons to another. The market in foreign ferromanganese has been active and, while \$43 to \$44, Baltimore, represents the price for early shipment, \$42.50 was paid for second quarter.

German and English furnaces are offering to sell basic pig, to meet American steel works' specifications, at \$17.50 on dock, Philadelphia, in cargo lots.

Structural business has been rather light lately, and it looks as though this branch is running into a duller period so far as new work is concerned. It is interesting to note that the largest of the orders, for a building on the Pacific Coast, placed during the week, went to the leading interest, which shows that a surrender of that market to the foreign mills of structural material is not thought of.

The announcement is made by the American Sheet & Tin Plate Company of an advance of \$2 per ton on black and galvanized sheets and 10 cents a box on tin plate. In wire, new business is not coming in freely, the trade being apparently sufficiently well stocked for the near future.

In the merchant pipe trade the principal item of interest is the sale by a mill in the Pittsburgh District of about 100 miles of various sizes to Fort Worth, Texas, to equip the town for the use of natural gas.

Importations are becoming an important factor in the old material situation. It is estimated that about 40,000 tons of foreign heavy melting stock have been bought for this side. It is known that three cargoes of bloom ends are to be shipped from Middlesbrough.

Coke has been very active and is advancing. Two sales of Connellsville coke alone cover deliveries of 25,000 tons a month for the whole of next year. One was made at \$2.90 per net ton, at oven, and the other on a sliding scale.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Sept. 29, Sept. 22, Aug. 25, Sept. 30,
1909. 1909. 1909. 1908.

FIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	\$18.50	\$18.25	\$17.25	\$16.75
Foundry No. 2, Southern, Cincinnati	17.75	17.75	16.75	15.75
Foundry No. 2, local, Chicago	19.00	19.00	17.50	16.85
Basic, delivered, eastern Pa.	18.50	18.00	17.50	16.00
Basic Valley furnace	16.50	16.00	15.25	14.25
Bessemer, Pittsburgh	18.40	18.40	17.40	15.90
Gray forge, Pittsburgh	16.90	16.40	15.65	14.40
Lake Superior charcoal, Chicago	19.50	19.50	19.50	19.50

BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	25.00	25.00	24.50	25.00
Forging billets, Pittsburgh	29.00	29.00	28.00	27.00
Open hearth billets, Philadelphia	27.00	27.60	27.00	26.20
Wire rods, Pittsburgh	31.50	31.50	31.00	33.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	17.25	16.50	16.00	14.75
Steel rails, melting, Philadelphia	17.75	17.50	17.00	15.00
Iron rails, Chicago	20.50	19.00	19.00	18.00
Iron rails, Philadelphia	21.00	20.50	19.75	20.50
Car wheels, Chicago	18.50	18.50	17.00	15.25
Car wheels, Philadelphia	17.00	17.00	16.00	15.00
Heavy steel scrap, Pittsburgh	17.50	17.50	16.75	15.00
Heavy steel scrap, Chicago	16.75	16.00	15.50	13.00
Heavy steel scrap, Philadelphia	17.75	17.25	17.00	15.00

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.57	1.55	1.47	1.45
Common iron bars, Chicago	1.55	1.50	1.40	1.50
Common iron bars, Pittsburgh	1.55	1.50	1.50	1.40
Steel bars, tidewater, New York	1.56	1.56	1.51	1.56
Steel bars, Pittsburgh	1.40	1.40	1.35	1.40
Tank plates, tidewater, New York	1.66	1.66	1.56	1.76
Tank plates, Pittsburgh	1.50	1.50	1.40	1.60
Beams, tidewater, New York	1.66	1.66	1.56	1.76
Beams, Pittsburgh	1.50	1.50	1.40	1.60
Angles, tidewater, New York	1.66	1.66	1.56	1.76
Angles, Pittsburgh	1.50	1.50	1.40	1.60
Skelp, grooved steel, Pittsburgh	1.40	1.40	1.40	1.45
Skelp, sheared steel, Pittsburgh	1.50	1.50	1.50	1.50

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.30	2.20	2.20	2.50
Wire nails, Pittsburgh	1.80	1.80	1.80	1.95
Cut nails, Pittsburgh	1.75	1.75	1.75	1.80
Barb wire, galv., Pittsburgh	2.10	2.10	2.10	2.40

METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	13.50	13.50	13.50	13.75
Electrolytic copper, New York	13.00	13.00	13.25	13.37½
Spelter, New York	5.85	5.85	5.85	4.80
Spelter, St. Louis	5.70	5.70	5.70	4.65
Lead, New York	4.38	4.38	4.40	4.47½
Lead, St. Louis	4.25	4.30	4.32½	4.32½
Tin, New York	30.75	29.15	30.45	29.62½
Antimony, Hallett, New York	8.30	8.30	8.00	7.75
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	\$3.74	\$3.64	\$3.64	\$3.89

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier, 85c. on sheets, Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.50c., net; I-beams over 15 in., 1.60c., net; H-beams over 8 in., 1.70c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.55c., net; angles, over 6 in., 1.60c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.70c., base, half extras, steel bar card; tees, 3 in. and up, 1.60c., net; tees, 3 in. and up, 1.55c., net; angles, channels and tees, under 3 in., 1.45c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.75c., net; hand rail tees, 2.75c., net; checkered and corrugated plates, 2.75c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.50c. to 1.60c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered $\frac{1}{4}$ -in. plate. Steel plates over 72 in. wide must be ordered $\frac{1}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under $\frac{1}{4}$ -in. to and including 3-16-in. plates on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete circles.....	.20
Boiler and flange steel plates.....	.10
"A. B. M. A." and ordinary firebox steel plates.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Shell grade of steel is abandoned.	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, No. 10 and heavier, 1.70c.; Nos. 11 and 12, 1.75c.; Nos. 13 and 14, 1.80c.; Nos. 15 and 16, 2.10c.; box annealed sheets, Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c.; No. 29, 2.35c.; No. 30, 2.45c.; galvanized sheets, Nos. 13 and 14, 2.35c.; Nos. 15 and 16, 2.45c.; Nos. 17 to 21, 2.60c.; Nos. 22 to 24, 2.75c.; Nos. 25 and 26, 2.95c.; No. 27, 3.15c.; No. 28, 3.35c.; No. 29, 3.45c.; No. 30, 3.70c. Painted roofing sheets, No. 28, \$1.55 per square. Galvanized roofing sheets, No. 28, \$2.85 per square for $2\frac{1}{2}$ in. corrugations.

Wrought Pipe.—Discounts on steel pipe, $\frac{3}{4}$ to 6 in., in carloads to the largest trade, are 81 and 5 per cent. off list, and on iron pipe, $\frac{3}{4}$ to 6 in., are 75 and 5 per cent. off list.

Boiler Tubes.—Regular discounts are as follows:

Boiler Tubes.	Steel.
1 to $1\frac{1}{4}$ in.....	.50
$1\frac{1}{4}$ to $2\frac{1}{4}$ in.....	.62
$2\frac{1}{4}$ to 5 in.....	.70
$2\frac{1}{2}$ in.....	.64
6 to 13 in.....	.62
$2\frac{1}{4}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.	
$2\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.	

Wire Rods.—Bessemer, open hearth and chain rods, \$31.50 to \$32.

Steel Rivets.—Structural rivets, 1.90c., base; boiler rivets, 2c., base, subject to usual extras.

Chicago.

FISHER BUILDING, September 29, 1909.—(By Telegraph.)

Continued heavy buying of pig iron in the face of steadily advancing prices has been a feature of marked interest in the events of this week. The step from \$14 to \$14.50, Birmingham, on No. 2 foundry was accomplished within a week, and was only effective a few days until it was moved up to \$15; this, in turn, bids fair to become the recognized market in time to justify the prophecies of those who predicted that this price would be realized by October 1. Furnacemen are not inclined to make extended commitments, and few are booking orders beyond the first quarter of next year. New orders for heavy rails aggregating 140,000 tons were taken last week by the Illinois Steel Company. One of 10,000 tons was also secured by an independent mill. Nearly all this business is for shipment in 1910. These orders will be supplemented by purchases of track fastenings, which will be correspondingly large. Specifications in all lines of finished material are coming out in large volume. New buying, however, is comparatively light since the mills have not generally opened their books for contracts beyond this year, and most of them cannot promise shipment of bars, shapes, plates and sheets inside of 6 to 10 weeks at best. Finishing departments are still confronted with a scarcity of steel, notwithstanding that every steel making furnace in this district, with the exception of two or three that are practically obsolete and unfit for service, is working. Another blast furnace at the Gary Works is about ready to go in, and will probably be started early next month. There is a heavy demand for scrap, and prices are steadily moving upward.

Pig Iron.—The market continues very steady and active, and the tendency is still upward. A multitude of small foundry orders of a few hundred tons each, together with a fair number ranging from 1000 to 2500 tons were entered last week by the various selling agencies. Southern and Virginia furnaces participated largely in the business taken, the greater part of it being for first quarter delivery, although this year's requirements figured to a considerable extent in the buying. Prices governing these transactions ruled firm at \$14.50, at furnace, on Southern and \$16, at furnace, on Virginia irons on all deliveries, including first

quarter. This week all of the leading Southern furnaces have moved up their schedules 50 cents a ton and are now holding at \$15, Birmingham; but while a few small lots have been taken at this price, not enough has been done to establish the market definitely on this basis. The leading Southern furnace interest, which withdrew from the market several weeks ago, has tentatively opened its books on first quarter business at \$15, this figure being named subject to furnace acceptances. While some prompt iron may still be had at \$14.50, the amount available in first hands is apparently limited, and in view of the very optimistic views entertained by producers generally, it seems likely to be quickly eliminated. The Northern market is not being moved up quite so rapidly. While several Northern furnace companies are asking higher prices, one maker continues to book tonnage for all deliveries up to the end of the first half of next year at \$18.50, at furnace. High silicon iron which has been slow in responding to the general tendency of the market, has been advanced to a basis of \$19 at furnace for 8 per cent. this year and \$20 and \$20.50 for the first and second quarters of next year, respectively. The malleable shops are very busy and are taking iron as rapidly as it can be furnished. Foundry departments of machinery builders are running full, but the jobbing shops are slower in filling up. Sellers report that consumers are not asking any hold-up on shipments, and while stock piles are doubtless being replenished, consumption is undoubtedly increasing. The following quotations are for October, November and December delivery, f.o.b. Chicago:

Lake Superior charcoal.....	\$19.50 to \$20.00
Northern coke foundry, No. 1.....	19.50 to 20.00
Northern coke foundry, No. 2.....	19.00 to 19.50
Northern coke foundry, No. 3.....	18.50 to 19.00
Northern Scotch, No. 1.....	19.00 to 19.50
Southern coke, No. 1.....	19.35 to 19.85
Southern coke, No. 2.....	18.85 to 19.35
Southern coke, No. 3.....	18.35 to 18.85
Southern coke, No. 4.....	17.85 to 18.35
Southern coke, No. 1 soft.....	19.35 to 19.85
Southern coke, No. 2 soft.....	18.85 to 19.35
Southern gray forge.....	17.35 to 17.85
Southern mottled.....	17.10 to 17.60
Malleable Bessemer.....	18.50 to 19.00
Standard Bessemer.....	19.90 to 20.40
Jackson Co. and Kentucky silvery, 4%.....	20.40 to 20.90
Jackson Co. and Kentucky silvery, 8%.....	21.40 to 21.90
Jackson Co. and Kentucky silvery, 10%.....	22.40 to 22.90

(By Mail.)

Billets.—As far as the local production is concerned, the scarcity of steel is unabated, and, although a good many inquiries are being received, makers are declining to quote because of inability to furnish the material required. The shortage of small billets is especially pronounced, since the 18-in. stands of the Gary billet mill are not yet in operation.

Rails and Track Supplies.—Continued interest is being manifested by the railroads in rail requirements for 1910. Orders booked by the Illinois Steel Company from three Western roads, together with a few miscellaneous lots, aggregated 140,000 tons. The largest individual purchase included therein was 75,000 tons. With the exception of about 20,000 tons, specifications called for Bessemer rails. Several of the leading Western roads have not yet come into the market, but will probably do so in the near future, so that prospects for continued activity in this line are encouraging. In addition to liberal specifications and urgent demands for shipments of track supplies, inquiries are being received for large quantities of spikes, bolts and other track fastenings for shipment next year. A fair amount of business in light rails is coming out, and the outlook for a still better demand from mining districts is favorable. We quote as follows: 40 to 45 lb., \$26; 30 to 35 lb., \$26.75; 16, 20 and 25 lb., \$27; 12-lb., \$28, Chicago, less 50c. a ton on lots of 500 tons and \$1 a ton on lots over 500 tons.

Structural Material.—Fabricating contracts closed last week included 350 tons for a Chicago ice rink, taken by the Central States Bridge Company, Indianapolis; the San Francisco Savings Union Building, 560 tons, awarded to Dyer Brothers; a structure for the Union Oil Company, Los Angeles, Cal., 1000 tons, which will be fabricated by the Llewellyn Iron Works, and the Hearst Estate office building, San Francisco, 2000 tons, which was secured by the American Bridge Company. A batch of 32 highway bridges, aggregating 250 tons, was taken by the Missouri Bridge Company for shipment to Oklahoma. Bids are in on the Scarborough office building, Dallas, Texas, 1450 tons, and the contract is expected to be let without delay. Bids have also been taken on 300 tons for a new warehouse to be erected by the Liquid Carbonic Company, Chicago, and the contract will probably be awarded in a day or two. Negotiations are still pending on the 2500 tons required for the extension of the Commonwealth Edison Company's electric plant in this city. Plans for the Van Alden warehouse, to be occupied by Carson, Pirie & Scott, calling for 5500 tons of structural shapes, have been changed and the building will be constructed of reinforced concrete, for which a large tonnage of reinforcing bars will be needed. Specifications for bridge material are being freely offered by the railroads. Delay in the closure of a good many projects now on the boards is attributed to the inability of fabricating shops to

promise definite delivery except at distant dates. Orders for plain material continue to pour into the mills, and but little, if any, headway is being made in overcoming the congested conditions that now exist. We quote plain material from mill at 1.68c., Chicago, and shipment from store 1.90c., Chicago.

Plates.—Local plate mills have sufficient specifications on hand to keep them going well up to the first of the year. Both consumers and jobbers are specifying liberally against existing contracts, the latter to replenish warehouse stocks, upon which heavy drafts are being made to supply prompt requirements. The fact that shipments of leading jobbers are heavier than ever before is, in a measure, indicative of the extent of current consumption, since buying of this character does not usually include forward requirements. We quote mill prices at 1.68c., Chicago; shipments from store, 1.90c., Chicago.

Sheets.—The demand for sheets continues very satisfactory both from mill and from store. Several of the independent mills, including that of the local interest, can take but little business for delivery this side of January 1. There is a disinclination on part of the mills generally to sell much further ahead. While, with the exception of blue annealed sheets, no actual advance in prices has taken place, the ruling schedule is being firmly maintained.

Bars.—Although well filled up and not promising shipment inside of 10 to 12 weeks, the mills continue to receive heavy specifications. From the nature of orders and the requests for prompt attention that accompany them, it would seem that they represent to a large extent actual needs of consumption. More and more inquiries are coming out for prices on deliveries through the first quarter and first half of next year, but thus far the mills have not opened their books for that period. All of the bar iron mills, including several small ones which have been idle for a long time, are now going at full capacity. With the increase of railroad buying, business has steadily improved and prices are firmer. We quote steel bars 1.58c. and iron bars at 1.55c., all at Chicago. Jobbers are asking 1.80c. on steel bars from store.

Merchant Pipe.—Demand for merchant pipe is well sustained. The movement is steady and regular, and is unimpeded by unsatisfactory deliveries, such as are interfering with the free distribution of other mill products. Jobbers are now able to count on shipment within three to four weeks, and no difficulty is experienced in maintaining store assortments. Prices, though firm, are unchanged.

Boiler Tubes.—Trade in general is fairly satisfactory, the demand being on the whole somewhat improved. Mills are behind with shipments of seamless tubes. As the season advances railroad orders for locomotive tubes are increasing, and there is more insistence for prompt shipment for repair work than heretofore.

Cast Iron Pipe.—Transactions have been largely confined to miscellaneous requirements, with no lettings of large tonnage reported. A better demand for gas pipe is noted, orders aggregating about 4000 tons having been taken by the leading interest; the same interest, within the past week has also booked an aggregate of about 4000 tons of culvert and water pipe. There continues to be a fair run of orders for small municipal plants, and it is understood that specifications are being prepared by some of the larger cities which are also expected to come into the market before long. In line with the advancing prices of pig iron the market is firmer, the tendency being toward a still higher level. We quote, per net ton, Chicago, as follows: Water pipe, 4 in., \$28; 6 to 12 in., \$27; 16-in. and up, \$26, with \$1 extra for gas pipe.

Metals.—While no round lots of copper for future shipment are being called for, consumers are buying more liberally for current consumption. Trade of this kind has been considerably more active in the past week, but the movement is too inconsiderable to affect prices sensibly, and they are still without change. There is a little more doing in other metals, such as lead and spelter, the latter having firmed up slightly in sympathy with a stronger feeling among the ore producing interests. We quote as follows: Casting copper, 13½c.; lake, 13¼c. to 14c., in car lots, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots, 31½c.; small lots, 33c.; lead, desilverized, 4.45c. to 4.55c., for 50-ton lots; corroding, 4.70c. to 4.80c., for 50-ton lots; in car lots, 2½c. per 100 lb. higher; spelter, 5.85c. to 5.90c.; Cookson's antimony, 10½c., and other grades, 9¾c. to 10¼c.; sheet zinc is \$7.50, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13¼c.; copper bottoms, 11½c.; copper clips, 12¼c.; red brass, 11¼c.; yellow brass, 9¼c.; light brass, 6¾c.; lead pipe, 4½c.; zinc, 4.50c.; pewter, No. 1, 23c.; tin foil, 25c.; block tin pipe, 27c.

Old Material.—The market continues firm and prices are higher. The heavy demand for track supplies from the railroads has stiffened prices on rolling mill grades. Old iron rails are in good demand, and some mills have been seeking options on them for delivery after January 1; dealers who have a considerable stock are unwilling to contract

for extended future delivery at prices anywhere near the present level, but are confident of obtaining better values later on. A sale of 100 tons of iron rails at \$21.50 for immediate delivery is reported. Inquiries are out from an Indiana car shop for old car wheels, but few holders of such stock are anxious to unload. Two railroad lists, one from the Rock Island of 2300 tons and one offered by the Chicago, Burlington & Quincy of 2700 tons, are to be closed this week. The following prices are per gross ton, f.o.b. Chicago:

Old iron rails.....	\$20.50 to \$21.00
Old steel rails, rerolling.....	17.50 to 18.00
Old steel rails, less than 3 ft.....	17.25 to 17.75
Relaying rails, standard sections, subject to inspection.....	22.50 to 23.50
Old car wheels.....	18.50 to 19.00
Heavy melting steel scrap.....	16.75 to 17.25
Frogs, switches and guards, cut apart.....	16.75 to 17.25
Shoveling steel.....	15.75 to 16.25

The following quotations are per net ton:

Iron angles and splice bars.....	\$18.00 to \$18.50
Iron car axles.....	21.00 to 21.50
Steel car axles.....	18.50 to 19.00
No. 1 railroad wrought.....	15.75 to 16.25
No. 2 railroad wrought.....	14.75 to 15.25
Springs, knuckles and couplers.....	15.50 to 16.00
Locomotive tires, smooth.....	17.00 to 17.50
No. 1 dealers' forge.....	13.50 to 14.00
Steel axle turnings.....	11.75 to 12.25
Machine shop turnings.....	10.25 to 10.75
Cast and mixed borings.....	7.50 to 8.00
No. 1 busheling.....	12.75 to 13.25
No. 2 busheling.....	9.50 to 10.00
No. 1 bellers, cut to sheets and rings.....	11.50 to 12.00
No. 1 cast scrap.....	15.00 to 15.50
Stove plate and light cast scrap.....	13.00 to 13.50
Railroad malleable.....	15.00 to 15.50
Agricultural malleable.....	13.50 to 14.00
Pipes and flues.....	11.75 to 12.25

Philadelphia.

PHILADELPHIA, PA., September 28, 1909.

The aggregate volume of business transacted during the week shows a slight decline, but the tone of the market is decidedly strong in all departments of the iron and steel trades. Advances are noted in several lines. The falling off in sales is believed to be but temporary and is attributed, to a considerable extent, to the refusal of sellers to accept business for next year's delivery, for which consumers are anxious to contract. In some lines buyers are not yet accustomed to the new price levels and show hesitancy in making purchases until they see that they have been firmly established. Foundry pig iron for this year's delivery shows an advance of 25c. a ton; sheets have advanced a full tenth of a cent per pound; refined iron bars are a trifle higher, while plates and shapes are firmly established at the 1.50c., Pittsburgh, base, with higher prices anticipated. Coke is advancing steadily in price, and few sellers are willing to take heavy contracts for next year's delivery except at a material advance. The probability of the importation of foreign crude and semifinished materials is more pronounced and several consumers are seriously considering the matter of making such purchases. It is reported that heavy purchases of steel melting scrap have been made abroad at prices ranging below that paid here for this grade of old material.

Pig Iron.—While the market continues extremely strong in every grade, there has not been a heavy volume of business. Inquiries are quite heavy, but the fact that so many producers are not only out of the market for iron for this year's delivery, but refuse as well to open order books for any large lots for next year's delivery, except at prices which now appear to be prohibitive, has checked buying to some extent. The most important sale was made to the local locomotive concern, which took 3000 tons of special grade foundry iron for shipment during the next six months at a trifle under \$18.50, delivered. One of the Delaware River cast iron pipe foundries, which recently inquired for 10,000 tons of low grade iron, has bought about half. With these exceptions the transactions in foundry iron have been small. Standard eastern Pennsylvania brands of No. 2X foundry command from \$18.50 to \$19 for early delivery, and a number of sellers have but small quantities to offer for such delivery. For shipment during the first half of next year prices show considerable variation, dependent on the condition of sellers' order books, \$19 to \$19.50 about representing the market for No. 2X for first quarter shipment, while as high as \$20 has been named for second quarter delivery. Deliveries on old contracts are being freely taken; stocks in buyers' yards are not large, while those on the furnace banks continue to show a slight decline. The higher grades of Virginia foundry irons have not been extensively sold; producers, with the exception of the leading interest, are well sold up, and asking prices have been pretty generally advanced, as high as \$16, at furnace, being named for prompt No. 2X. The majority of the Virginia interests refuse to quote on any material quantity for deliveries into 1910. There has been no movement of Southern foundry iron in this territory; prices are considerably above those quoted on local brands for early delivery. Forge iron continues

quiet, but prices remain very firm, and in some instances makers ask higher figures, quotations depending largely on sellers' willingness to accept the business. Hardly enough has been transacted, however, to make a market, and quotations are to a large extent nominal. There is considerable inquiry for basic iron, but the majority of the producers have advanced their price to \$18.50 for prompt or first quarter delivery, while some few who have their capacities fully taken are quoting \$19 for early 1910 shipment. The sales reported have not been heavy; one lot of 2000 tons of Southern basic was sold for prompt shipment at \$18, delivered, but there is practically no eastern Pennsylvania basic for this year's delivery on the market. Under certain circumstances \$18 might still be done for first quarter basic, but if a consumer desired to buy the price would likely be advanced. A very good demand for low phosphorus iron has developed; inquiries aggregate about 8000 tons, the bulk of which is in moderate lots. Sellers are not anxious to let go at the recent market prices, particularly for forward deliveries, and have advanced prices so that \$21.50 to \$22.50 represents about the market for deliveries in this vicinity. With the constantly advancing prices the matter of importing foreign pig iron is being given considerable attention. A quantity of foundry iron has been offered, but the difference in price has not yet been great enough to induce buying as long as the supply of domestic iron holds out. Both English and German basic iron are being considered, and foreign basic in cargo lots, for which quantity foreign makers would agree to meet mills' specifications, has been offered at \$17.50, delivered on dock. The market on the whole has an attitude of waiting further developments; buyers would take iron if they could get it, but sellers show no disposition to accept any more business than they can possibly avoid, anticipating a still higher market level. For moderate lots of standard eastern Pennsylvania irons, delivered in buyers' yards in this vicinity during the remainder of the year, the following range of quotations is named, an advance of 50c. a ton about representing prices for deliveries during the early portion of next year:

Eastern Pennsylvania, No. 2 X foundry.	\$18.50 to \$19.00
Eastern Pennsylvania, No. 2 plain.	18.00 to 18.50
Virginia, No. 2 X foundry.	18.50 to 19.00
Virginia, No. 2 plain.	18.25 to 18.75
Gray forge.	17.25 to 17.50
Basic.	18.50
Low phosphorus.	21.50 to 22.50

Ferromanganese.—More activity is noted. Sales of small lots aggregating some 1500 tons for delivery during the last quarter and first half are reported at prices ranging from \$43 to \$44, Baltimore, depending on the quantity. A lot of 2000 tons, for second quarter of next year, was sold at \$42.50, Baltimore, while one of 800 tons, for delivery during the second half of the year, was sold at a shade under \$44.50, seaboard. For extended shipment the market does not show the same firmness as it does for early delivery. Sales of some 20,000 tons of foreign spiegeleisen for early delivery are reported, but prices are not available.

Billets.—A very active demand, particularly for forging billets, is reported by the mills. Sales of ordinary rolling billets have also been good and Eastern mills are now pretty well sold up as far as this year's delivery is concerned, and show no disposition to open order books for next year. Prices are very firm at \$27.60 to \$28.60 for prompt ordinary rolling steel delivered. Prices of forging billets show some variation, dependent upon individual conditions, \$30 f.o.b. mill representing the minimum for ordinary forging steel, the usual extras applying for high carbons and special sizes.

Plates.—Mills continue to book a fair average business. While the bulk of it is in moderate lots for prompt shipments, some few orders for round lots for bridge and boat plates have been taken. Deliveries, except on universal plates, are good, and some of the business which was lost to Western mills during the recent dull period is again coming to the Eastern mills, owing to the inability of customers to get satisfactory deliveries from the former. Mills maintain prices firmly and a higher level is talked of. For shipment extending during the remainder of the year, beyond which mills still refuse to open books, prices for ordinary plates in this territory are quoted at 1.65c. to 1.70c. for ordinary plates, the customary extras applying as usual.

Structural Material.—Mills are fully engaged, and while no heavy contracts have been taken, a good average business has been done. Several large propositions are pending, the most important being one for about 3000 tons for a building in Baltimore, bids for which will be opened next week. Deliveries on some classes of material are unsatisfactory, and at the rate orders are coming in the mills are not able to make any material gain on delayed shipments. Prices are very firm, 1.65c. to 1.70c. being quoted for plain material, dependent upon specifications.

Sheets.—A very good volume of business continues to be taken by the mills. Prices are higher, no difficulty being experienced in obtaining a tenth of a cent per pound advance for prompt deliveries, while still higher figures are obtained for deliveries extending up to the end of the year.

Mills are fully engaged, and no disposition is shown to contract for next year, although buyers are anxious to anticipate their wants. For prompt shipments the following range of prices is quoted: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—There is a good volume of business offered, but makers will not make contracts for forward deliveries at ruling quotations. Specifications come out freely and mills, as a rule, are better engaged. Prices show an upward tendency, refined iron bars for prompt delivery in this territory being quoted at 1.57c. to 1.62c. Steel bars are quite active, but makers still refuse to accept business for delivery beyond the year end. For delivery in this vicinity steel bars are quoted at 1.55c. to 1.60c.

Coke.—The market is very strong, and prices have advanced sharply. Heavy inquiries for both furnace and foundry coke are noted, but sellers in many cases refuse to quote for next year's delivery, while prompt coke is scarce and high. One transaction, however, covering 60,000 tons of furnace coke, for delivery during the remainder of this and the entire next year is reported, the price being \$2.50, at oven. This represents the entire product of the producer. Quotations named show considerable variation, foundry coke, for this year's shipment, ranging from \$2.40 to \$2.75, at oven, while furnace coke commands \$2.25 to \$2.50, at oven, with prices for next year 25c. to 50c. higher, but with practically no business being transacted at the higher levels. For delivery in this territory, during the balance of the year, the following range of prices, per net ton, is named:

Connellsville furnace coke.	\$4.50 to \$4.75
Foundry coke.	4.65 to 5.00
Mountain furnace coke.	4.10 to 4.35
Foundry coke.	4.25 to 4.60

Old Materials.—The market shows steadily increasing strength. A moderate tonnage of heavy melting steel is being moved at prices ranging from \$17.75 to \$18.25; the associated mills still adhering to \$18, delivered. Considerable movement between brokers is noted and several 1000 ton lots have changed hands at the \$18.50 delivered basis, which, it is understood, was bought to apply against old contracts. A larger quantity of heavy melting steel has been bought for importation, estimated at 40,000 tons, all of which is reported to have been purchased at prices inside the present market. Rolling mill grades show a slight advance on moderate sales, while a stronger movement is noted in some of the special grades. The following range of prices, while nominal to a certain extent, represents quotations for prompt delivery in buyers' yards, eastern Pennsylvania and nearby points:

No. 1 steel scrap and crops.	\$17.75 to \$18.25
Low phosphorus.	21.50 to 22.00
Old steel axles.	23.50 to 24.50
Old iron axles.	29.00 to 30.00
Old iron rails.	21.00 to 21.50
Old car wheels.	17.00 to 17.50
Choice No. 1 R. R. wrought.	20.50 to 21.00
Machinery cast.	16.00 to 16.50
Railroad malleable.	17.00 to 17.50
Wrought iron pipe.	17.50 to 18.00
No. 1 forge fire scrap.	15.50 to 16.00
No. 2 light iron.	10.00 to 10.50
Wrought turnings.	14.75 to 15.25
Stove plate.	14.00 to 14.50
Cast borings.	13.00 to 13.50
Grate bars.	14.25 to 14.75

Birmingham.

BIRMINGHAM, ALA., September 27, 1909.

Pig Iron.—The volume of business transacted the past week was probably no larger than for the week previous. A majority of transactions involved comparatively small lots for early delivery, and low grades were principally in demand. On the sales made there is no doubt that \$14.50, Birmingham, for No. 2 foundry was the lowest price considered, except under special conditions. The usual differential of 50c. per ton on the No. 2 basis has not applied to the grades below No. 3 foundry in any recent transaction, the value of such grades being governed entirely by local furnace conditions. Incident to the scarcity of low grades, it is noted that within the past fortnight some such iron has been marketed at a differential on the No. 2 basis that heretofore would not have been considered. For first quarter 1910 deliveries a schedule of \$15, Birmingham, is being quoted by the majority of producers and is not considered prohibitive of trading. This price is in no case applicable to shipments covering the first half, and in two instances is the price for deliveries covering the remainder of this year. Two of the leading producers are entirely out of the market for comparatively early shipment and offer only a limited tonnage for the first quarter at the \$15 schedule. The latest reports as to stocks on furnace yards indicate further decrease, and in all lines of foundry trades the raw material received is being consumed promptly. There is more or less complaint among the founders as to the small increase so far effected in the selling price of finished products, and this condition is believed to account largely for the hesitancy in taking hold for 1910 requirements. The largest in-

quiries pending at this time are from stove manufacturers, although it is understood that manufacturers of cast iron pipe will soon enter the market.

Cast Iron Pipe.—Reports for the week just ended are without specific information as to lettings at an early date. The general inquiry has improved considerably and the aggregate of small orders placed for maintenance and extensions is very attractive. All local plants are being operated to capacity, and in one instance a material addition to capacity is contemplated. It is generally conceded that the market is in a very healthy condition and considerably less competition than formerly experienced is expected to result for the tonnage soon to be placed. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$26; 8 to 12 in., \$25; over 12-in., average \$24, with \$1 per ton extra for gas pipe. These prices are believed to be as low as would be considered in any case, the small orders placed having brought a considerably higher average.

Old Material.—A very significant tonnage has been involved in recent transactions and stocks have been further decreased. The Eastern market has been especially attractive to local dealers and has resulted in stronger quotations on steel and wrought grades. Light cast and stove plate have been advanced 50c. per ton in sympathy with the pig iron market, and old iron rails and axles are considerably in demand. Dealers' asking prices are firm as follows, per gross ton, f.o.b. cars here:

Old iron rails.....	\$17.00 to \$17.50
Old iron axles.....	18.50 to 19.00
Old steel axles.....	16.50 to 17.00
No. 1 railroad wrought.....	13.50 to 14.00
No. 2 railroad wrought.....	11.50 to 12.00
No. 1 country wrought.....	10.50 to 11.00
No. 2 country wrought.....	10.00 to 10.50
No. 1 machinery.....	11.50 to 12.00
No. 1 steel.....	11.50 to 12.00
Tram car wheels.....	11.00 to 11.50
Standard car wheels.....	12.50 to 13.00
Light cast and stove plate.....	11.00 to 11.50
Cast borings.....	5.50 to 6.00

Cleveland.

CLEVELAND, OHIO, September 28, 1909.

Iron Ore.—To make deliveries on all that has been sold for this season's shipment, work will have to be rushed at the mines during the balance of the season and some anxiety is being expressed by furnacemen over the possibility of not getting all their ore. If cold weather sets in at the usual time, the ore interests do not expect any trouble in getting out what is desired, but if winter puts a stop to mining operations two weeks earlier than usual some consumers may be unable to get all they have contracted for. The movement continues very heavy, but September shipments are expected to fall slightly below those of August. It is believed now that the season's shipment will reach and perhaps exceed 40,000,000 tons. Every foot of available dock space at the lower lake ports has been taken and the docks are being crowded with ore as they never have been before. It is estimated that at the close of navigation there will be 9,000,000 tons of ore on the dock piles. A few sales are still being made in small lots, but with the exception of odds and ends all the ore men are now practically sold up. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The market is quite active, and prices on all grades are higher. Local furnaces have advanced their prices on foundry iron for first half delivery \$1 a ton, to \$18 at furnace for No. 2, and some of the Valley furnaces have made a similar advance. Local furnaces are holding to the same price for balance of the year delivery. All furnace interests report sales during the week aggregating good round lots for first half delivery, most of the sales being in lots of 500 tons or under. Considerable was sold at \$17 for No. 2. Then the price was advanced to \$17.50, and more was taken on at that price before the further advance was made by the furnaces that are now asking \$18. No. 2 foundry iron for the first half can still be had, however, in the Valley at \$17.25 to \$17.50, and those prices appear at present to represent the market for the first quarter and half. The demand is holding up well and local furnaces are now figuring on inquiries for first half delivery aggregating 15,000 to 20,000 tons. The Westinghouse Electric & Mfg. Company, which had an inquiry out for 3000 tons of foundry iron for its Cleveland plant, has placed its order, the bulk of it going to local furnaces. We note the sale of some small lots of Bessemer at \$18 for prompt shipment. The same interest has rejected an offer of \$18 for 10,000 tons of Bessemer for the last quarter, and is holding to \$18.50 for the first quarter. A number of basic inquiries for the first quarter have developed. One interest is refusing to quote prices and another is asking \$18. Among the inquiries pending are one for 5000 tons and two for 3000 tons each. We note an advance on Jackson County silvery iron to \$19, at furnace for 8 per cent. silicon for the balance of the year, \$20 for the first quarter and \$20.50

for the second quarter of next year, the freight rate to Cleveland being \$1.55. For the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer.....	\$18.90
Northern foundry, No. 1.....	\$18.65 to 18.90
Northern foundry, No. 2.....	18.15 to 18.40
Northern foundry, No. 3.....	17.65 to 17.90
Southern foundry, No. 2.....	18.85
Gray forge.....	16.50 to 17.00
Jackson County silvery, 8 per cent. silicon.....	20.55

Coke.—The market is fairly active and prices are higher. Standard Connellsville furnace coke is held at \$2.60 to \$2.65 per net ton, at oven, for spot shipment, about \$2.75 for the balance of the year and \$3 for the first half. We quote standard Connellsville foundry coke at \$2.50 to \$2.75 for spot shipment and \$3 to \$3.25 on contract for the first half.

Finished Iron and Steel.—The demand continues heavy in all lines. Consumers who have low priced contracts that expire October 1 have with scarcely an exception sent in specifications for the full amount and some have overspecified. That the consumers actually need nearly all the material ordered is indicated by the fact that the mills are being crowded for the deliveries. One independent interest has advanced its price on steel bars to 1.50c., Pittsburgh, but with this exception all price quotations remain unchanged. A fair volume of new business continues to come out. The American Shipbuilding Company has secured a contract for building two package freighters for the Rutland Transit Company. The boats will take 2500 tons of plates and structural material, for which the contract has been placed with the Carnegie Steel Company. The contract for 1700 tons of shapes and plates for ore handling machinery to be built by the Wellman-Seaver-Morgan Company at Ashtabula has been given to the Jones & Laughlin Steel Company. A few contracts for steel bars are being placed for delivery after the first of the year, but most of the mills are avoiding such contracts as much as possible. One mill agency announces that it is willing to take on steel bar, plate and structural business for the first quarter at 1.60c., Pittsburgh. All mills report that they are getting further behind on deliveries. This condition has resulted in an increase in the volume of warehouse business which is very heavy, and mills that can make prompt deliveries have no trouble in getting a premium of \$1 to \$2 a ton. Owing to the crowded condition of many of the plate mills a local mill that can make quick deliveries is taking orders at 1.60c., Pittsburgh. The demand for iron bars continues good, local mills being well filled with specifications. We quote iron bars at 1.55c. to 1.65c., Cleveland, the former price being for outside shipment. The demand for sheets continues active and consumers are anxious to contract for future delivery. Some contracts are being closed at current prices, although a few mills are asking and getting an advance of \$2 a ton for the first quarter. The demand for forging billets in car lots is good, some orders having been placed at \$30 to \$31, Pittsburgh.

Old Material.—The market is very active, particularly in heavy melting steel, for which there is a good demand from the Valley and Pittsburgh districts, as well as from the local mills. Several grades have advanced from 50c. to \$1 a ton. Dealers are offering \$16 to \$16.50 for heavy melting steel. The advance in prices is bringing out a fair amount of scrap from yard stocks, but many dealers are holding for higher prices. Mills as a rule are buying only for their early needs. The demand for cast scrap is quite heavy. In the list closed by the Lake Shore Railroad last week the heavy melting steel is understood to have brought \$18, or slightly better. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$16.75 to \$17.25
Old iron rails.....	20.00 to 20.50
Steel car axles.....	20.00 to 20.50
Old car wheels.....	17.00 to 17.50
Heavy melting steel.....	16.75 to 17.25
Relaying rails, 50 lb. and over.....	21.50 to 22.50
Agricultural malleable.....	14.50 to 15.00
Railroad malleable.....	16.00 to 16.50
Light bundled sheet scrap.....	11.00 to 11.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$21.00 to \$21.50
Cast borings.....	8.50 to 8.75
Iron and steel turnings and drillings.....	10.50 to 10.75
Steel axle turnings.....	12.00 to 12.50
No. 1 bushelling.....	14.00 to 14.50
No. 1 railroad wrought.....	16.00 to 16.50
No. 1 cast.....	14.50 to 15.00
Stove plate.....	12.50 to 13.00
Bundled tin scrap.....	11.00 to 11.50

The Ferro Machine & Foundry Company, Cleveland, Ohio, has appointed Williams & Wilson, Montreal, its agents for the sale of Ferro marine engines in the Province of Quebec. A large stock of these engines, reverse gears and repair parts will be maintained in Montreal.

The Carnegie Steel Company will add four open hearth furnaces to the No. 4 plant of the Homestead Steel Works.

Pittsburgh.

PARK BUILDING, September 29, 1909.—(By Telegraph.)

Pig Iron.—The Westinghouse interests have bought between 12,000 and 14,000 tons of foundry and forge iron for their plants in the Pittsburgh District, partly for fourth quarter delivery, but chiefly for first half, paying approximately \$16.50, Valley furnace, for No. 2 foundry iron for this year and \$17 for next year. The Westinghouse Electric & Mfg. Company also bought a round block for its Cleveland Works. Another large Pittsburgh consumer has bought 12,000 tons of Northern foundry and forge iron for delivery fourth quarter and first quarter at about \$16.50 at furnace for fourth quarter and \$17 for first quarter for foundry iron, the forge averaging about 75c. less. A number of smaller sales have been made at higher prices, the market having sharply advanced. We quote foundry iron at \$16.75, Valley furnace, for this year's delivery, and malleable at \$17, prices for next year being 25c. to 50c. higher. Basic pig iron has been quiet locally, only odd lots being sold, but one sale of 10,000 tons for fourth and first quarters was made to an Eastern plant at the reported price of \$19.25, delivered in the Philadelphia District, which would work out about \$17 at furnace. We quote basic for this year at \$16.50, Valley furnace, and \$17 for delivery next year. The Youngstown Sheet & Tube Company late last week bought 25,000 tons of Bessemer from the Bessemer Pig Iron Association at \$18, Valley furnace, for delivery over the first half of next year, and a local brokerage house has bought 5000 tons at the same price, with the understanding that the iron is to apply on a conversion deal. We quote standard Bessemer iron at \$17.50, Valley furnace, for this year's delivery, and \$18 or higher for next year.

Steel.—Steel is becoming scarce, and mills seem averse to selling for far forward delivery at any price. We note a sale of 2000 tons of open hearth sheet bars at \$28, maker's mill, to a delivery point which takes practically the same freight from this mill as from Pittsburgh, also a sale of 1000 tons of Bessemer sheet bars at \$27.50, Pittsburgh, or \$28, delivered, both sales being for fourth quarter. We quote Bessemer billets, 4 x 4 in., at \$25 to \$25.50; open hearth billets, \$26 to \$26.50; Bessemer sheet bars, \$27; open hearth sheet bars, \$28, and forging billets, \$29 to \$29.50, all f.o.b. maker's mill, Pittsburgh District.

(By Mail.)

Pig iron has been relatively quiet since the extreme activity of the first three weeks in September, but the tone of the market continues very strong. The advancing tendency seems to have shifted to finished products, which it has been claimed have lately been out of line with the cruder materials, considering the rather rapid advance of the latter. The American Sheet & Tin Plate Company on Tuesday announced an advance of \$2 a ton on black and galvanized sheets and 10c. a box on tin plate, making its regular prices 2.30c. on No. 28 black and 3.35c. on No. 28 galvanized, and \$3.50 on 100-lb. coke tin plates. While the steel mills have not advanced their absolute minimum prices on bars, plates and shapes, they are naming such prices only in exceptional cases, where the delivery is particularly convenient for them. For first quarter delivery plates have been sold at 1.60c. and steel bars at 1.50c., both in round lots, and, barring accidents, it is plain that the market is working up to a basis for next year of 1.50c. on bars and 1.60c. on plates and shapes. Sheet bars have touched a new high point, a round lot of open hearth sheet bars for fourth quarter delivery having been sold at \$28, f.o.b. maker's mill. There continues to be talk about the market advancing too rapidly, but it is expected that the level will soon be found, if it has not been reached already.

Ferromanganese.—The market is somewhat stronger, minimum prices already quoted being possible only on odd lots for early delivery. We quote the market at \$42.50 to \$43 for prompt, \$43.50 to \$44 for fourth quarter and \$45 for first quarter or first half, all f.o.b. Baltimore, the freight to Pittsburgh being \$1.95.

Ferrosilicon.—The market continues strong, with a good demand. We quote 50 per cent. ferrosilicon at \$64 to \$64.50, f.o.b. Pittsburgh, and blast furnace ferrosilicon, delivered Pittsburgh, at \$23, for 10 per cent., \$24 for 11 per cent. and \$25 for 12 per cent.

Muck Bar.—The market is very strong, most producers refusing to quote, as the material is needed for their own finishing mills. We quote prime all-pig muck bar at \$29 to \$29.50, Pittsburgh.

Wire Rods.—The rod market is firm, but there is no great inquiry for early delivery, as consumers are pretty well covered. There is some inquiry for next year, but mills as a rule refrain from quoting for such delivery. In a few cases quotations have been made at a wide spread above the current market. We quote, for early delivery, \$31.50 for Bessemer and \$32 for open hearth, f.o.b. maker's mill, Pittsburgh District.

Skelp.—The market continues very firm, local producers

being well sold up, and not caring to quote on additional business. We quote grooved steel skelp at 1.40c. to 1.45c.; sheared, 1.50c. to 1.55c.; grooved iron, 1.70c. to 1.75c., and sheared iron plates at 1.80c. to 1.85c., all for ordinary widths and gauges, f.o.b. Pittsburgh.

Steel Rails.—No important rail contracts are reported as booked by the local interest this week, but production continues at the heavier rate recently inaugurated. We quote steel axles at 1.65c. to 1.70c., and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., \$32; 12 to 14 lb., \$29; 16, 20 and 25 lb., \$28; 30 and 35 lb., \$27.75, and 40 and 45 lb., \$27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at \$28, at mill.

Plates.—Mills are drawing the lines much tighter and are only doing the 1.50c. price in exceptional cases, when the delivery especially suits them, say for December and January shipment. Odd lots for early delivery are bringing 1.55c., while plates in good sized lots have sold at 1.60c., for February and March delivery. It looks as though the plate market would work up to a definite minimum of 1.60c. for next year's delivery. We quote the market at 1.50c. to 1.60c., Pittsburgh, for ¼-in. and heavier, depending on quantity and delivery.

Structural Material.—The structural shops continue to specify freely and the market is very firm. We quote shapes at 1.50c. to 1.60c., depending on quantity and delivery, the market being practically in the same position as the plate market.

Tin Plate.—The American Sheet & Tin Plate Company on Tuesday announced an advance of 10c. a box, making its price \$3.50 for 100-lb. cokes, f.o.b. Pittsburgh. This is the first change in the price of tin plate since March 10, when the price was reduced from \$3.65 to \$3.40. Unlike sheets, there was practically no shading in tin plate at the reduced price, which was well adhered to by all sellers. For some time the independents have been obtaining premiums on small lots of tin plate for prompt delivery, but there has been less of this in the past fortnight than formerly, as the pressure for quick deliveries has subsided. Mill operations continue heavy, the leading interest operating about 153 tin mills, while the independents are running practically full. It is expected that the production of tin plate in the three closing months of the year will exceed the output in the corresponding period in either of the past two years, and may even break the 1906 record.

Sheets.—Effective Tuesday, the leading interest advanced its prices on black and galvanized sheets 10 cents per 100 lb. to 2.30c. for No. 28 black and 3.35c. for No. 28 galvanized. This action was not unexpected, as the sheet market has been growing firmer for some time and the independents have been disposed to take individual action in the matter of advances. Last Friday the Youngstown Sheet & Tube Company advanced its prices to 2.30c. on black and 3.30c. on galvanized. For several weeks mills have been very chary about selling, frequently scaling down orders offered, while refusing to sell for next year's delivery. The recent advance in blue annealed sheets to 1.70c. for No. 10 is well held. No change has been made in corrugated roofing. We quote corrugated roofing at \$1.55 per square for painted and \$2.80 per square for galvanized, all No. 28, f.o.b. Pittsburgh, in carload and larger lots.

Bars.—Some sales of round lots of steel bars have been made at 1.50c., Pittsburgh, for delivery in the first quarter, but for such deliveries as the mills can conveniently make this year 1.40c. can be done by favored buyers. Mills are strictly adhering to the rule of canceling all unspecified on old contracts. The leading interest followed the rule in making contracts some time ago, to require specifications to be in equal monthly instalments, and it has been cutting off all unspecified at the end of each month. With other producers there are a number of contracts expiring October 1, and anything unspecified is to be canceled immediately. We quote steel bars at 1.40c. to 1.50c., depending on delivery and quantity. Iron bars are gaining in strength daily, and the minimum of the market is 1.55c., Pittsburgh, while some mills are quoting 1.60c. and some even as high as 1.65c. The Jones & Laughlin and Republic companies issue their new list of extras on steel bars this week. The list follows the minor changes made in some extras by the Carnegie Steel Company in its list dated September 1, including that by which extras on small angles and on hexagons are so arranged that the base price on steel bars covers them as well, thus obviating the necessity of quoting a separate price on angles and hexagons. The list of the others, however, adheres to the practice of naming full extras, while it will sell, as formerly, on the basis of half extras. The new Carnegie card cut most of the extras in half, so that net extras are quoted on that card. The independent mills have informally reached an understanding to adhere to the old practice of printing the full extras in their cards, but all will issue new cards carrying the minor alterations made in the Carnegie card.

Hoops and Bands.—Specifications continue good and there is a fair amount of new buying. Hoops are selling at 1.50c. to 1.60c., depending on quantity and delivery, conditions being similar to those prevailing in bars. Steel bands continue quotable at a minimum of 1.35c. to 1.40c., with steel bar card extras.

Spikes.—The market continues very strong, it being practically settled that there will be an advance for next year's delivery, producers having refused to quote for next year at the current rate. Some producers are quoting an advance of 10c. even for this year's delivery. We quote the minimum at \$1.70 for railroad spikes, $4\frac{1}{2}$ x 9-16 in. and larger, and \$1.75 on small spikes, carload and larger lots, with 5c. advance for less than carload lots.

Rivets.—The advanced prices on rivets are well held and there is a very good demand. We quote structural rivets, $\frac{3}{4}$ in. and larger, at 1.90c., base; cone head boiler rivets, $\frac{3}{4}$ in. and larger, 2c., base; $\frac{5}{8}$ in. and 11-16 in. take an advance of 15c., and $\frac{1}{2}$ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Merchant Pipe.—Spang, Chalfant & Co. have secured the Ft. Worth, Texas, pipe contract, involving 100 to 110 miles of pipe of various sizes for piping the town for natural gas. The same interest has taken a contract from a Western gas company for 30 miles of 16-in. pipe. The Monongahela Natural Gas Company's order for 15 miles of 12-in. pipe or 16-in. is still to be placed, and there are one or two other good line pipe orders in the market. While no change in merchant pipe prices may be made in the near future, the mills fully expect an advance and are conservative in booking orders. The official discount on black steel pipe, $\frac{3}{4}$ to 6 in., is 81 and 5, and on iron pipe, $\frac{3}{4}$ to 6 in., 75 and 5, in carload and larger lots to the wholesale trade. These prices are absolutely minimum, jobbers charging the usual advances to the smaller trade for shipment from store.

Boiler Tubes.—The demand for boiler tubes has continued to improve and the market has taken on a firmer aspect, although there is still a little shading now and then.

Iron and Steel Scrap.—There has been no material advance in scrap prices in the past week. The tone of the market is reported as very firm, while some dealers are holding their material for higher prices than can be obtained at present. Most of the open hearth steel plants in this district are fairly well provided with scrap, having laid in some extra stock for the winter, as is the custom. Large producers, even the railroads, are believed to be holding back considerable material in expectation of higher prices, but as far as regards railroad material at least there are likely to be larger offerings before cold weather. One sale of heavy melting scrap of 1000 tons is reported at \$18, delivered, but generally the highest bids are \$17.75, and some material has been picked up at \$17.50. A sale of about 2000 tons of cast borings is reported at \$11.25, delivered. We revise prices slightly from last week, crop ends and old car wheels being slightly firmer. We quote heavy steel scrap at \$17.50 to \$17.75 per gross ton for delivery at Monessen, Sharon, Steubenville, Pittsburgh, Brackenridge and Follansbee, these being the leading steel scrap consuming districts in the Pittsburgh territory. Prices on borings are \$11 to \$11.25; No. 1 cast is \$16.25 to \$16.50; No. 2, \$15.25 to \$15.50; low phosphorus melting stock, 0.04 and under, \$21.50 to \$22; sheet bar crop ends, \$19.50 to \$20; steel axles, \$21.75 to \$22; iron axles, \$27 to \$27.50; grate bars, \$13.50 to \$14; rerolling rails, \$18 to \$18.50, delivered, Newark or Cambridge, Ohio; locomotive tires, \$20; locomotive axles, steel or iron, \$29; old car wheels, \$18.50 to \$19; machine shop turnings, \$13 to \$13.25; standard iron axles, \$27.50; stove plate, \$13; No. 1 railroad wrought scrap, \$18 to \$18.50; No. 1 busheling, \$16 to \$16.25; No. 2, \$12.50 to \$13, all per gross ton, f.o.b. Pittsburgh, unless otherwise stated.

Coke.—Prices for Connellsville coke have advanced sharply. Following several bids of \$2.75 per net ton at oven for furnace coke for next year, which operators refused to consider, there was a sale of 15,000 tons a month over the whole of next year at \$2.90, and since then two sales have been made for first six months at the same figure, and one for the entire year, also at \$2.90. While furnaces hesitate about paying this price, operators are looking for \$3 coke for next year, and do not seem to think the advance will stop there. Coke is also higher for this year's delivery, and while some odd lots have been picked up at \$2.75 and \$2.85, a sale of about 10,000 tons a month for fourth quarter has been made at \$3. Foundry coke is not bringing much higher prices than furnace coke. We quote the market for this year at \$2.75 to \$3 per net ton at oven for either furnace or foundry coke, and for next year at \$2.90 to \$3 for furnace and \$3 to \$3.25 for foundry. The production of coke in the Connellsville region is increasing but slowly despite the strenuous efforts of operators to get more men. Last week's production is reported at 426,648 net tons, a gain of 2000 tons over the previous week, and making the best weekly showing since 1907.

Cincinnati.

CINCINNATI, OHIO, September 29, 1909.—(By Telegraph.)

The closing month will be memorable with iron and steel tradesmen in this market. It will represent the high water mark of production and sales of pig iron for many months, and with the machine toolmakers is strongly reminiscent of the early days of 1907. Profiting by the experience of those times, toolmakers are marketing their product on different lines, and the opinion is expressed that, however depressed the trade might become, results could not show in wholesale cancellations as they did then. Splendid business for the remainder of the year seems assured. Coke markets are in a very feverish condition and higher prices seem inevitable.

Pig Iron.—Existing conditions among furnacemen make it a very difficult market to report. A matter of an hour or so may change a price or completely obliterate it. In fact, it is a question now what furnace or furnaces may be willing to name a price, and these are limited to two or at most three in either Southern or Northern districts. Order books seem to be about filled to capacity for the balance of the year, and reluctance to name a price for next year is becoming more marked with each day's flight. Although inquiries are not numerous, immense tonnages for balance of the year and first quarter are in negotiation. Most of the transactions are without the customary formal typewritten inquiries, and some are made with feverish haste. One of the largest selling interests has a record of 22,000 tons for the 24th and 18,000 tons on the 27th, exclusive of sales of one of its largest Western branch offices. Steel making irons are in the greatest demand from Eastern territory, and low grades are the most sought for of the foundry irons, because most scarce. The largest pipe making interest is endeavoring to buy low grades, but no prices are obtainable here, and none seemingly is to be had. The selling of Northern iron in this section of Ohio is practically limited to two furnace interests on foundry grades, one of the largest interests announcing to-day that it has absolutely nothing to offer. The best price paid on this iron is \$17 for balance of the year and \$17.50 for the first half. Southern offerings are likewise limited to practically two interests, with a price range of \$14.50 to \$15, Birmingham, for balance of the year, and \$15, minimum, for first quarter. A sale of Alabama iron at \$14.50, Birmingham, was made this morning, consisting of 1000 tons, for prompt shipment, the furnace immediately joining the \$15 column and leaving but one Alabama furnace able to supply a limited tonnage at \$14.50. Jackson County silveries have advanced 50c., a general notification to agents and customers going out under date of the 24th. The new spot price for delivery in this territory is \$19.20 for 6 per cent., \$20.20 for 8 and \$21.20 for 10, with an additional spread of 50c. each for the first and second quarter of next year. Red River has advanced to \$19.50, Jackson County basis, for balance of this year. The northern Ohio steel maker wanting 3000 to 4000 tons of Bessemer is reported still in the market. Other northern Ohio steel makers are inquiring. A large Michigan manufacturer of farm implements wants several hundred tons; a southern Ohio foundry, 1000 tons of Northern for first quarter; a Michigan engine builder, 1050 tons, half foundry and half malleable, for balance of the year; a West Virginia steel maker, 1500 to 2000 tons, basic, for first half. A deal involving 12,000 tons of basic will be negotiated on October 1 through a Cincinnati agency. One large interest has inquiries for 3000 tons of forge and mottled, which it cannot furnish. Ferrosilicon has advanced, and is now on the basis of \$22, Ohio furnace, for 10 per cent. For prompt delivery and remainder of the year based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry.....	\$18.25 to \$18.75
Southern coke, No. 2 foundry.....	17.75 to 18.25
Southern coke, No. 3 foundry.....	17.25 to 17.75
Southern coke, No. 4 foundry.....	17.00 to 17.25
Southern coke, No. 1 soft.....	18.25 to 18.75
Southern coke, No. 2 soft.....	17.75 to 18.25
Ohio silvery, 8 per cent. silicon.....	20.20
Lake Superior coke, No. 1.....	18.20 to 18.70
Lake Superior coke, No. 2.....	17.76 to 18.20
Lake Superior coke, No. 3.....	17.20 to 17.70
Standard Southern car wheel.....	23.25 to 24.25
Lake Superior car wheel.....	20.25 to 21.25

(By Mail.)

Coke.—The market is hardening, and the trend of prices continues upward. So far as can be learned here there is no contracting, or, at least, comparatively little. Spot Connellsville furnace grades are firm, at \$2.25 to \$2.50 per net ton, at oven, and the best price obtainable on standard brands for the first half is about \$2.75 to \$2.90. Connellsville foundry coke is bringing \$2.75 to \$3 for spot shipment and \$3 to \$3.25 for first quarter and half. Wise County furnace grades are quotable at \$2 to \$2.35 at oven for spot shipment. There is no contracting. Wise County foundry is quotable at \$2.25 to \$2.50 for this year and \$2.50 to \$2.75 for shipment through the first half of next year. Pocahontas furnace coke is selling at \$2.25 to \$2.50 for spot and first

half; foundry, \$2.50 to \$2.75, spot and on contract. New River furnace grades are quotable at about \$2.40 to \$2.60 on contract and \$2.75 to \$3.25 for foundry, dependent on brands and shipment.

Structural Material.—Practically all the leading interests are on the 1.50c., Pittsburgh, basis for structural shapes, and while there is talk of the price going to the 1.60c. level ere the first of the year, conservative sellers believe it will not happen for 60 days at least. It is reported here that the leading interest is taking on a little for the first quarter at present quotations; but aside from this there is no intimation here of any willingness to contract. One independent interest is still taking a little business in shapes and guaranteeing deliveries in five to six weeks at the 1.50c., Pittsburgh, basis.

Bars.—Steel bars are still quoted in this market on the basis of 1.40c., Pittsburgh, although certain interests are asking and getting 1.50c., being able to promise comparatively early delivery. Specifications against contracts are very heavy, and prices are firm with an advancing tendency. Six to eight weeks seem to be the best deliveries available. Iron bars are in stronger demand and are quotable at about 1.50c. to 1.55c., local mills.

Sheets.—Deliveries are from six to eight weeks behind from the mills of the largest interest, while some of the smaller independents are giving comparatively early delivery, taking a premium. The mills of the largest interest are reported to be constantly gaining ground, although about the best that can be done on deliveries at this time is 10 weeks on tin plate. Few mills are quoting on deliveries beyond January 1.

Old Material.—Heavy melting steel is easily the leader with local scrap interests, with prices averaging about the same as last week. A few items are stronger and show an advance of about 25c., with but comparatively little buying. There has been considerable competition among large dealers over scrap and borings and turnings from the tool establishments, and as an outcome a form of contract has been devised which regulates prices and avoids controversies. It is based on the quoted price of Southern iron in the spot markets. For delivery in buyers' yards, Cincinnati and southern Ohio, we quote as follows:

No. 1 R. R. wrought, net ton.....	\$14.50 to \$15.00
Cast borings, net ton.....	8.25 to 8.75
Heavy melting steel scrap, gross ton..	15.50 to 16.00
Steel turnings, net ton.....	9.25 to 9.75
No. 1 cast scrap, net ton.....	14.50 to 15.00
Burnt scrap, net ton.....	10.00 to 10.50
Old iron axes, net ton.....	19.00 to 19.50
Old iron rails, gross ton.....	18.50 to 19.00
Old steel rails, short, gross ton.....	15.50 to 16.00
Old steel rails, long, gross ton.....	16.50 to 17.00
Relaying rails, 56 lb. and up, gross ton..	22.50 to 23.00
Old car wheels, gross ton.....	15.50 to 16.00
Low phosphorus scrap, gross ton.....	18.00 to 19.00

The German Iron Market.

BERLIN, September 16, 1909.

The turnout of pig iron continues to increase. The make in August reached 1,100,671 metric tons. With the exception of five months in 1907, this represents the highest monthly production in the history of the trade. Whether production will continue at the present pace seems doubtful. Two or three furnaces have just been blown out, and it is not probable that any others will be blown in soon to take their place. One or two of these furnaces were stopped because their owners say they can buy their supply of pig in the market more cheaply than they can smelt it themselves. On the other hand, the heavy imports of ores would seem to foreshadow an increase in the output of pig. In August they amounted to 1,171,000 tons, as compared with 884,000 tons in August, 1908.

Efforts are still being made to organize the bar manufacturers. This week representatives of the Silesian trade have gone to the lower Rhine to hold a conference with the manufacturers there on the subject. In some quarters strong hopes are entertained that these latest negotiations will result favorably, but many manufacturers do not indulge in such hopes. The efforts to organize in bars have been too long protracted, and have been too often disappointed to permit them to look for a different result now.

The large iron companies whose fiscal year ends with June 30 have begun to announce their dividends. These show mostly sharp reductions thus far. The Bochumer Gusstahl distributes 12 against 15 per cent., the Rheinische Stahlwerke 6 against 11, the Charlottenhuetten 6 against 8, Dueseldorfer Roehrenindustrie 8 against 10, and the Geisweiler Eisenwerke 4 against 10. Some big concerns, whose announcements are yet to come, are expected to show still poorer results.

The Dayton Coal & Iron Company, Dayton, Tenn., will rebuild its No. 1 furnace. Ladd & Baker, Inc., Real Estate Trust Building, Philadelphia, Pa., are the engineers.

St. Louis.

ST. LOUIS, September 27, 1909.

Increasing activity in all lines of manufacturing and jobbing, together with satisfactory conditions among retail merchants, is very generally reported. Building continues to expand, and the operations of the railroads, both as to freight movement and the purchase of supplies, are marked in volume and urgency. The iron business seems to lead all others in buoyancy, and this is doubtless owing to the wide range of its application and uses. Bank clearings continue to show a gain over the corresponding time in 1908, the gain for the past week being 13 per cent.

Coke.—Notwithstanding that the advance from the lowest point on coke is more than 50 per cent., it should be remembered that the demand last spring was far below the capacity of the various producers. It has taken time to eliminate the disposition to offer coke at sacrifice prices, but it would appear that as the occasion for this course is now wholly removed, no further offerings of that character may be counted on. As a matter of fact, the coke trade is at present under better control than at any time since the financial depression set in, and is in distinct contrast with the situation in steam coal, which is suffering from overproduction. The demand for foundry coke is increasing, but furnace coke is in limited request. Among the sales reported was 15 cars coke to a local railroad at \$2.50 for balance of 1909 delivery. Following other markets and the views of operators, higher prices are asked. For the last quarter of 1909, \$2.75 is quoted by some offices, while the same brokers state they have no price for long contract coke. Other houses report they are offering coke at \$3 for shipment over the first half of 1910, but experience difficulty in placing orders for that delivery. The market for 72-hour foundry, standard brands, Connellsville, is nominally \$2.75 for prompt shipment, and \$3 for shipment over the first half of 1910, per net ton, f.o.b. oven.

Pig Iron.—There is no let-up in the demand for pig iron, and while the interest of buyers principally centers in what may be done in securing liberal bookings for 1910 iron, judging by the inquiries the various houses are daily receiving in their mails, by the time many of their would-be customers have determined on buying, a further advance in some cases prevents business from resulting. It is quite evident that Southern furnacemen at least are not disposed to entertain speculative transactions, having seen that they took on too much low-priced business last spring. It would, on the contrary, appear that they are swinging as far in the opposite direction by the successive advances made in prices. Furthermore, it is likely that some of the larger companies may go out of the market altogether for a time. The representative of one of the Birmingham companies, in view of his own recent sales and the business booked by his principals from other markets, is daily looking for such instructions. There is an inquiry out for 1500 tons of malleable iron for shipment over the last quarter of 1909 and the first quarter of 1910, also for 500 tons of high manganese iron for shipment over the first half of 1910. Notwithstanding the increasing difficulty of placing orders, all the leading sales agencies report having effected, in the aggregate, quite liberal sales for the past week. We quote the market as follows: For shipment over the last quarter of 1909, \$14.50; for shipment over the first quarter of 1910, \$14.50, though \$15 is asked by some sellers, while in instances a premium has been paid for immediate shipment. The foregoing prices are for Southern No. 2 foundry, f.o.b. Birmingham.

Old Material.—The movement in scrap iron and steel is gaining in volume, and the market is not only very strong, but higher prices are asked for some items. The small lot of 300 tons now on the market by the Vandalia Line is the only railroad offering of the week. Relaying rails are scarce and wanted. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails.....	\$17.00 to \$17.50
Old steel rails, rerolling.....	16.00 to 16.50
Old steel rails, less than 3 ft.....	15.75 to 16.25
Relaying rails, standard sections, subject to inspection.....	24.50 to 25.00
Old car wheels.....	18.00 to 18.50
Heavy melting steel scrap.....	16.00 to 16.50
Frogs, switches and guards, cut apart.....	16.00 to 16.50

The following quotations are per net ton:

Iron fish plates.....	\$15.00 to \$15.50
Iron car axles.....	20.50 to 21.00
No. 1 railroad wrought.....	15.25 to 15.75
No. 2 railroad wrought.....	14.25 to 14.75
Railway springs.....	13.75 to 14.25
Locomotive tires, smooth.....	15.50 to 16.00
No. 1 dealers' forge.....	11.00 to 11.50
Mixed borings.....	7.50 to 8.00
No. 1 boilers cut to sheets and rings..	11.00 to 11.50
No. 1 cast scrap.....	14.50 to 15.00
Stove plate and light cast scrap.....	10.75 to 11.25
Railroad malleable.....	14.00 to 14.50
Agricultural malleable.....	12.00 to 12.50
Pipes and flues.....	11.00 to 11.50
Railroad sheet and tank scrap.....	10.50 to 11.00
Railroad grate bars.....	11.75 to 12.25
Machine shop turnings.....	9.50 to 10.00

Lead, Spelter, Etc.—Lead is ruling quiet at 4.25c.,

East St. Louis. Spelter is very strong at \$5.82 $\frac{1}{2}$ c. Zinc ore is in fair demand at \$47.50 per ton, Joplin, base. Tin is unchanged, antimony steady and copper stronger. The demand for finished metals is gradually increasing.

The Board of Public Improvements has introduced an ordinance in the city government to authorize the letting of a contract for the steel and erection of the superstructure of the free bridge. The cost of the steel, including its erection, is \$1,000,000. Specifications for the bridge approved by the board show the amount of steel necessary for the bridge to be 32,586,000 lb., or 16,293 net tons, if carbon steel trusses are used. Nickel steel reduces the weight to 27,500,000 lb., or 13,705 tons. Pins and nuts alone will weigh 477,000 lb., while pedestals and shoes will weigh 510,000 lb. and rollers 126,000 lb. The railroad floor will require 3,791,000 lb. of steel and the highway floor 4,997,000 lb. Laterals, &c., will weigh 1,067,000 lb., truss bars will aggregate 6,753,000 lb. and built members 10,769,000 lb. The figures are for nickel steel. Carbon steel on the built members runs 50 per cent. higher.

The Board of Public Improvements has outlined a plan of elimination for four grade crossings in the Mill Creek Valley railroad section. The cost of this improvement, according to the complete estimate, is \$2,140,440, mainly for viaducts or subways.

The John D. Manley Implement Company will erect at 709-719 Cass avenue a new plant at a cost of \$125,000, exclusive of the machinery. The lot has a frontage of 123 ft. and a depth of 133 ft. The building will be a four-story brick structure.

The Mississippi Valley Transportation Company has recently been incorporated, with an authorized capital stock of \$10,000,000. The headquarters of the company are at St. Louis, offices being taken on the ninth floor of the Bank of Commerce Building. The company will operate a freight steel barge line between this city and New Orleans. W. K. Kavanaugh is president and John L. Matthews secretary.

San Francisco.

SAN FRANCISCO, September 22, 1909.

The buying movement in finished materials shows no sign of falling off. Some lines have shown an increased volume during the past month, while in others the movement is hardly as large as during the early summer. The tonnage booked so far this year falls considerably below that of 1907, though far in excess of last year's business. Merchant pipe is believed to have passed the height of activity for this year, as most of the large requirements have been filled, and no important inquiries are coming up at present. A further increase is anticipated in bars and structural shapes, as the building outlook is still promising, though the place to be taken by foreign competition in this market is still to be determined. The local bar situation is a little stronger, supplies from stocks being sold at 2.20c., while the prevailing rate for some time past had been 2.10c. Foreign bars can be laid down here at about 1.60c. or 1.65c., and a considerable tonnage arrived from Antwerp September 4, in addition to a shipment of plates and bands. The difficulty of securing supplies for immediate delivery is an important factor in the increasing firmness of the market. No exceptionally large orders for machinery have been taken recently, but the general demand is increasing, with a gradual revival of the mining and lumbering industries. Heavy shipments of woodworking machinery are now moving to the Philippines.

Rails.—The rail tonnage booked for Pacific Coast delivery is still keeping up, mill representatives in this territory reporting large individual orders for standard sections within the last few weeks. Numerous smaller inquiries continue to come in, while the movement of light rails both for stock and for immediate use continues as large as at any time during the summer. The first cargo of Nova Scotia rails for the Grand Trunk Pacific arrived at Prince Rupert, British Columbia, September 1.

Structural Material.—Building activities in San Francisco show some increase, though the amount of work begun during the past month was very little greater than in July. According to the record of building permits, there is still less building on hand than at the same time last year. Contracts for permanent structures are of slightly larger volume than for wooden buildings, but the letting of a recent contract of some importance for reinforced concrete rather than steel frame has been something of a disappointment to the steel interests. Most of the other cities on the Coast show a decided increase in building, and a number of large projects are coming up outside of San Francisco. A heavy tonnage for bridge work may also be required during the fall. The more important steel frame jobs in this city are still held back, no individual contracts of much consequence being reported during the last few weeks, though several transactions are looked for at any time. The St. Francis annex has not yet come up, and no definite information has yet been given out concerning the Hearst Building. The

St. Francis Hospital has been before the contractors for some time, but no award has been made. Figures are now being taken on the Y. M. C. A. Building in Oakland, and a large bank structure in this city will come up in the near future. Plans have been announced for a six-story hotel building for R. S. Browne, but the job will not be up for figuring for some time. Notwithstanding the delay in letting large jobs, the total volume of small work including odd jobs on Class C buildings, &c., makes up a considerable tonnage, practically all of which is fabricated by local shops, which are not prepared to handle the larger contracts. Eastern fabricators are taking little work in this market at present, and the larger local fabricators are still busy on old work. One contractor has already exceeded the time limit on a large municipal building. The rolling interests have booked a heavy tonnage of structural shapes and report increasing inquiries from local fabricators, especially for quick delivery. Most of the shops have had a considerable quantity of material on hand during the last year, but stocks are rapidly decreasing. A heavy tonnage of foreign material is expected in the next few months, but definite information regarding that en route is not yet obtainable. In view of the firmness of freight rates, importers are acting with great caution. A small lot of angles was included in the arrivals of September 4. The Crane Company has let the steel contract for its six-story warehouse in Los Angeles to the Baker Iron Works.

Pig Iron.—Municipal requirements for cast iron work have been a considerable factor in the market for the last three months, and the letting to a local firm of a contract for 2378 tons has been of some benefit. Very few of the foundries around San Francisco are operating at full capacity, but most of them are melting on a larger scale than for about a year. The larger machinery foundries are now fairly busy on contracts for hydraulic equipment, &c., and the tonnage used for structural castings shows a slight increase. While most of the larger requirements are filled on former contracts, the current demand for pig iron is fairly active. There is little inquiry for future requirements, but the supplies in the hands of importers have been reduced to some extent, while the anticipation of greater demands imparts some strength to the market. Holders have so far maintained their prices and the present quotations show some advance over figures recently mentioned, spot offerings being held at \$23 for English and \$23.50 for Chinese iron. As the former duty has been paid on most of the stocks on hand, and no heavy arrivals are looked for in the next few months, prices are not likely to decline materially before the first of the year. No large lots have come in recently. Several carloads of pig iron have been shipped from the electric smelter at Heroult, Cal., during the last month.

Cast Iron Pipe.—The outlook for cast iron pipe on the Pacific Coast during the remainder of the year is rather doubtful, as the tonnage booked of late has been of no great importance, and from present indications there is little probability that any of the larger projects in prospect will be ready for figuring before the first of the year. The United States Cast Iron Pipe & Foundry Company has taken an order from the city of San Luis Obispo, Cal., for a moderate tonnage of pipe, fittings, valves and calking material, comprising the first order under a new bond issue. That city has plans not yet complete for an entire waterworks system, which will require a fairly large tonnage next year. Other orders have been of small consequence, and the tonnage now moving to the Coast is smaller than for some time. Work on the San Francisco project will commence shortly, a large quantity of pipe being already on hand. The city has awarded a contract for 2378 tons of specials for this system to Chas. C. Moore & Co., who submitted the only bid, amounting to \$332,976. It is asserted that the specifications for this work are more exacting than those of the Government for such material.

Merchant Pipe.—Jobbers in San Francisco are still filling small orders a prices below parity with those prevailing in the East, but this condition is not so prevalent in the local trade as last month, owing to the reduction of stocks on hand and the difficulty of replacing large quantities at short notice. It is reported that a number of local interests have been endeavoring to place sorting-up orders recently for immediate shipment, with little success, though large orders from the jobbing trade for extended delivery are not numerous. The movement continues fairly active in a small way, deliveries from local stocks being of about the same volume as for some time, while the firmer feeling in the East is bringing out some additional inquiry. The oil field business has fallen off considerably, however, as all the larger projects likely to be carried out this year have been provided for, and the current transactions are of a routine character. A few minor developments are talked of, but the plans have not taken definite form. While no increase in the movement is looked for the rest of the year, the tonnage of 1909 is expected to show a material increase over that of last year.

Old Material.—No large transactions have been closed this month, but the market continues firm in view of the large purchases formerly reported, which have reduced the stocks

in this city to small volume. The Pacific Hardware & Steel Company has made arrangements with a Coast steamer line to move its purchases from this port to its plant at Portland, and the material is going out rapidly. Large orders recently placed for foundry work have caused some increase in the local inquiry, and a ready market is expected for the supplies remaining. Prices are quoted about as before, but there is an upward tendency to the market and most holders anticipate somewhat higher prices.

New York.

NEW YORK, September 29, 1909.

Pig Iron.—There has been an active market, and some round sales have been made in this territory. The principal inquiry, from a boiler maker, is still under negotiation, however. In New England a number of foundries have bought liberally for delivery next year, the total footing up to about 25,000 tons. This includes 15,000 tons from a Connecticut boiler and radiator manufacturer. We quote New York prices as follows: Northern No. 1 foundry, \$19 to \$19.50; No. 2 foundry, \$18.50 to \$19, and No. 2 plain, \$18 to \$18.50, for delivery in 1909. Alabama irons are quoted on the basis of \$18.75 to \$19 for No. 2, for 1909 delivery.

Steel Rails.—The Pennsylvania Railroad announces that it has bought 200,360 tons of rails for 1910 delivery, divided, as usual, between 85-lb. and 100-lb. sections. It is understood that the greater part of the order is for Bessemer rails, though a considerable percentage is open hearth, carbon in the case of the latter ranging from 0.70 to 0.75, with 0.04 phosphorus. The allotment has not been given out, though it is understood the Steel Corporation mills will roll nearly half the amount, the Pennsylvania Steel Company and the Cambria Steel Company together furnishing nearly as much as the Steel Corporation, while the balance is divided between the Bethlehem Steel Company and the Lackawanna Steel Company. The Bethlehem Steel Company has also taken a contract for open hearth rails for the Norfolk & Western. The Lackawanna Steel Company has sold 10,000 tons additional to the Northern Pacific for delivery this year, half of it to be Bessemer and half ferrotitanium rails. For the Mexican extension of the Harriman lines a recent sale of 12,000 tons has been made by the United States Steel Products Export Company.

Structural Material.—The fabricating plants are all very busy, and are making outputs approaching those of 1907, though in some cases organizations have not been fully restored; yet new work is light. The lull is only natural after so many months of activity. The plants of the largest interest, with 385,000 tons on its books, will be employed well through the coming winter. For plain material some mills are asking 1.60c., Pittsburgh, on deliveries running over into 1910, and the engagements of all are such that very little additional can be taken on for delivery this year. In Greater New York a new pier, No. 31, for Brooklyn, requiring about 1500 tons, is among new work being figured on. The New Haven road is taking bids on three bridges, the principal one being at Worcester, Mass., and the Central of New Jersey is in the market for a single bridge. Pacific Coast work now being figured on includes 2000 tons for the new Heddeg Theater, at Portland, Ore. We continue the quotation of 1.66c., New York, on beams and channels up to 15 in.

Ferroalloys.—We hear of some good sized inquiries for ferromanganese, and sellers are quoting \$44 for this year's delivery. Ferrosilicon is selling better at from \$62 to \$63, New York.

Bars.—The bar iron market is moderately active, with consumers specifying freely against contracts. Quotations show a wide range. Leading eastern Pennsylvania mills ask from 1.50c. to 1.60c., tidewater, on ordinary bar iron, and 1.60c. to 1.70c., tidewater, on refined and test bars. Steel bars are quoted at 1.56c. to 1.61c., tidewater.

Cast Iron Pipe.—Small lots are in fairly active demand, but no important lettings are in sight in this immediate vicinity. Inquiries are fair, and a few transactions have been closed for spring delivery. Although the immediate demand is not specially heavy, the foundries are comfortably filled for the remainder of the year, and are in position to advance prices to correspond with the upward movement in pig iron. It is now believed to be practically impossible to secure carload lots of 6-in. at less than \$24.50, per net ton, at tidewater. Some foundries are quoting \$25.50.

Old Material.—The market appears to be most active in foundry scrap. A good demand is experienced from foundries in this city, and its immediate vicinity, while New England is buying very freely and paying above the usual difference in prices. Old car wheels are also in sharp demand. Prices have been advanced on all classes of foundry scrap. The movement in heavy melting steel scrap is much under that of recent weeks, but it is evident that some buyers are anxious to secure this class of material, as prices are not only stronger, but in a few instances a higher rate has been realized than that named by the buyer for the associated steel

companies. Offerings of foreign scrap are being received and some sales made. Prices are being solicited on cargoes from Mexico, Cuba and other points on this side of the Atlantic. A lot of 700 tons of Swedish iron rails is offered for importation at about \$20, New York, duty paid. All bids on the Panama scrap have been rejected by the Isthmian Canal Commission. Quotations are as follows, per gross ton, New York and vicinity:

Rerolling rails.....	\$16.50 to \$17.00
Old girder and T rails for melting.....	15.50 to 16.00
Heavy melting steel scrap.....	15.50 to 16.00
Relaying rails.....	22.50 to 23.00
Standard hammered iron car axles.....	24.00 to 24.50
Old steel car axles.....	20.50 to 21.00
No. 1 railroad wrought.....	18.00 to 18.50
Wrought iron track scrap.....	16.50 to 17.00
No. 1 yard wrought, long.....	16.50 to 17.00
No. 1 yard wrought, short.....	16.00 to 16.50
Light iron.....	11.00 to 11.50
Cast borings.....	10.00 to 10.50
Wrought turnings.....	12.50 to 13.00
Wrought pipe.....	14.50 to 15.00
Old car wheels.....	16.00 to 16.50
No. 1 heavy cast, broken up.....	15.00 to 15.50
Stove plate.....	13.00 to 13.50
Locomotive grate bars.....	13.00 to 13.50
Malleable cast.....	16.00 to 16.50

Metal Market.

NEW YORK, September 29, 1909.

Copper.—Prospective copper buyers show a great deal of caution and sellers view with some concern the continued large output. Inquiries that have been placed before the trade do not seem to materialize into orders very rapidly, although a few transactions have been reported. It is generally hoped that there will soon be a check in the production, and in this event it is thought that buyers will come into the market on the assurance that prices will not go down. The trade is looking forward to the producers' statistics which are due October, 10 and this makes the market a hesitating one. The United Metals Selling Company is quoting 13.12½c. for electrolytic copper, but plenty of the metal can be had at 13c. Lake copper is nominally 13.50c., and most of the resale copper which was offered so cheap has been taken care of. In London to-day spot copper was sold for £59 5s., and futures for £60 2s. 6d. The sales amounted to 350 tons of spot and 800 tons of futures.

Pig Tin.—The pig tin market is in the hands of the speculators, and they have been forcing prices up all the week, it is thought, with a view to obtaining a good price at the Banca sale in Rotterdam, Holland, which took place to-day, when 2000 tons were sold at the equivalent of 30.90c., New York. The prices quoted and established during the week did not deceive consumers, however, and they simply stayed out of the market, and let the speculators handle the situation. Those who had tin and wanted to sell it could find no purchasers, and those who needed tin decided to hold off until the flurry subsided. It is thought that from to-day prices will recede somewhat, and perhaps some real business will be done. Prices established during the week were as follows:

	Cents.
September 22.....	30.30
September 23.....	30.35
September 24.....	30.50
September 27.....	30.70
September 28.....	30.80
September 29.....	30.75

The London market was also a speculative one, and prices went up there in sympathy with the American market. To-day spot tin was sold for £140 and futures for £131 2s. 6d. The sales were 100 tons of spot and 500 tons of futures.

Tin Plate.—The American Sheet & Tin Plate Company announced an advance of 10c. a box on tin plate to-day, and some of the independent mills have followed suit. Several independents have been getting as much as 15c. a box as a premium for early delivery for some time. There has been a steady demand for tin plate of late, and as the canners will shortly come in the market for their year's supply the advance was not altogether unexpected. The new price for 100 lb. I C coke plates is \$3.74.

Lead.—Lead can be had from outside interests in New York for 4.37½c., although the American Smelting & Refining Company is charging 4.40c. But little lead is being bought, and it is so freely offered that we quote the market price as that asked by the outside interests. In St. Louis plenty of lead can be had from outside parties at 4.25c.

Old Metals.—The market is steady. The following dealers' selling prices represent present conditions:

	Cents.
Copper, heavy cut and crucible.....	12.75 to 13.00
Copper, heavy and wire.....	12.25 to 12.50
Copper, light and bottoms.....	11.50 to 11.75
Brass, heavy.....	9.00 to 9.25
Brass, light.....	7.25 to 7.50
Heavy machine composition.....	11.75 to 12.00
Clean brass turnings.....	8.25 to 8.50
Composition turnings.....	9.50 to 9.75
Lead, heavy.....	4.20 to 4.25
Lead, tea.....	3.90 to 3.95
Zinc scrap.....	4.15 to 4.25

Spelter.—Spelter is a little easier, and the price is now

5.85c. We are unable to locate parties who are reported as offering the metal under that price, and would-be buyers who have scoured the market are equally unsuccessful.

Antimony.—Nothing new has developed in the antimony situation since the recession reported here last week. Hallitt's is bringing 8.30c. and Cookson's 8.50c., while the Hungarian grades are offered at 7.25c.

Buffalo.

BUFFALO, N. Y., September 28, 1909.

Pig Iron.—The market has been characterized by pronounced buoyancy and activity, with the largest and most general buying of any week since the depression ended. Sales in this district for the week have aggregated about 50,000 tons, largely foundry grades, with some malleable and basic. The demand from car wheel makers and foundries dependent upon railroad patronage is becoming more and more active, and the demand is good from machinery makers and cast iron pipe foundries. There is also a widening inquiry for charcoal iron. Prices have advanced materially for most grades, although there is quite a wide variation in the range quoted by different furnaces, due to the more completely sold-up condition of some as compared with others—a number of them are practically out of the market on this account, and those that are heavily sold ahead are naturally asking premiums. One furnace interest states that the minimum price it is quoting for No. 2X is \$17.50; for No. 2 plain, \$17; for No. 3, \$16.50, and for malleable, \$17.50, f.o.b. Buffalo. Other furnaces, although well sold up, are quoting a lower range. The schedule given below represents the situation as closely as possible, for deliveries over balance of year and first half of next, f.o.b. Buffalo:

No. 1 X foundry.....	\$17.00 to \$17.50
No. 2 X foundry.....	16.75 to 17.25
No. 2 plain.....	16.25 to 16.75
No. 3 foundry.....	16.00 to 16.50
Gray forge.....	16.00 to 16.50
Malleable.....	17.00 to 18.00
Bessemer.....	18.50 to 19.00
Basic.....	17.00 to 17.50
Charcoal.....	20.00 to 21.00

Finished Iron and Steel.—The good demand continues for plates and plain structural material, with accentuated pressure for steel bars. No change in prices has been made, although the market is hardening somewhat and indications point to higher asking prices in the near future. The local office of the leading interest reports a large volume of specifications on contracts from this district and Canada, and that less effort is now expended in the endeavor to seek new trade than in the effort to deliver the orders already on their books, and meet the needs of customers by proportioning them according to the capacity of the mills. This agency is also making deliveries from stock at the Waverly storehouse for urgent needs of its customers requiring prompt shipment—to such as cannot wait for deliveries from mills and are willing to pay the increased stock prices. In fabricated structural material the tendency is toward higher prices. Some fabricators are experiencing difficulty in obtaining material on contracts from mills as rapidly as required, and considerable structural work is being held back on this account, as material from other sources cannot be substituted in time, even at premium prices. Contract for the steel for the American Radiator Company's Laboratory and Office Building, 100 tons, has been awarded to the George Kellogg Structural Company of this city. The Riter-Conley Company has received contract for fabricating and erecting 400 tons of steel for a crane runway at the plant of the Gould Coupler Company, Depew, N. Y., a manufacturing suburb of Buffalo.

Old Material.—The market continues exceedingly strong, with an active demand for all grades, and a large aggregate tonnage has been disposed of during the past week. One large concern alone sold 20,000 tons, covering various grades, for early shipment. Prices are firm, without special change from last week, except for iron axles, turnings and borings, which have advanced slightly. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$16.50 to \$17.00
Low phosphorus steel.....	21.00 to 21.50
No. 1 railroad wrought.....	17.00 to 17.50
No. 1 railroad and machinery cast scrap.....	15.50 to 16.00
Old steel axles.....	20.00 to 21.00
Old iron axles.....	24.00 to 24.50
Old car wheels.....	17.00 to 17.50
Railroad malleable.....	16.00 to 16.50
Boiler plate.....	14.50 to 15.00
Locomotive grate bars.....	12.50 to 13.00
Pipe.....	13.00 to 13.50
Wrought iron and soft steel turnings.....	11.25 to 11.75
Clean cast iron borings.....	9.50 to 10.00
No. 1 bushing scrap.....	14.00 to 14.50

The Winona Technical Institute, Indianapolis, Ind., will have an enrollment this year of 300 to 400 students, according to present indications. All departments are now open. One new department, the Machinery School, will be for training practical machinists. It is under the auspices of the National Metal Trades Association.

All departments, except one, are under the direction of national associations, represented by advisory committees, the chairmen of which live in Indianapolis. The chairmen are: Foundry, J. L. Ketcham; Lithography, Louis H. Levey; Printing, A. M. Glossbrenner; Tile Laying, C. M. Cooper; Brick Laying, T. A. Randall; Machinery, F. W. Spaecke.

Important New Construction by the Bethlehem Steel Company.

The Bethlehem Steel Company has now practically determined upon the programme of new construction at its plants at South Bethlehem, Pa., which has been under consideration for some time. It has been decided to build two modern blast furnaces in addition to the one now under construction, which it is expected will be completed by February, 1910. Contracts for the other two are to be let at once.

The new steel works will either consist of 10 50-ton open hearth furnaces, duplicating the existing Saucon plant, or of two 20-ton Bessemer converters. If the latter are decided upon it is the expectation that the operation of the duplex process will double the output of the existing open hearth furnaces.

Bids have been asked this week on a 28-in. universal mill, a 22-in. bar mill and a 22-in. structural mill, together with roll tables, conveyors, heating furnaces, &c., all of these additions and the buildings containing them being erected at the old or Lehigh plant of the company. At the Saucon plant a new Grey mill, a duplicate of the present one, which was described in *The Iron Age* of January 2, 1908, will be built.

The improvements just decided upon and the blast furnace work now in progress represent an outlay of \$6,000,000, and will double the capacity of the South Bethlehem works in rails and structural shapes.

Iron and Industrial Stocks.

NEW YORK, September 29, 1909.

The industrial stocks have been conspicuously strong. The continued reports of buoyant business conditions are contributing excellent support to the operators on the Stock Exchange, who are industriously working in the direction of higher prices. United States Steel common has continued its march upward and is now selling at a price at which the preferred could have been bought two years ago. Republic common is also establishing new high records. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com..	15 - 15½	Republic, pref.....	106½-108
Allis-Chalm., pref..	52¼-54½	South. I. & S., com.	19½-20½
Beth. Steel, com..	34 - 36	South. I. & S., pref.	54 - 54½
Beth. Steel, pref..	68 - 68½	Sloss, com.....	88 - 91
Can, com.....	12¼-12½	Pipe, com.....	33 - 33½
Can, pref.....	81½-83	Pipe, pref.....	86½-86
Car & Fdry, com..	68 - 70	U. S. Steel, com....	82¼-89½
Steel Foundries...	60 - 61½	U. S. Steel, pref....	128 - 129½
Colorado Fuel....	44½-46½	Westinghouse Elec.	86 - 88
General Electric...	166½-169	Va. Iron, C. & C...	70 - 73
Gr. N. ore cert....	81 - 83½	Chl. Pneu. Tool....	32½
Int. Harv., com..	96½-97½	Am. Ship, com....	64 - 65
Int. Harv., pref..	119½-120½	Am. Ship, pref....	110½-111
Int. Pump, com..	47 - 48½	Cambria Steel....	46½-49
Int. Pump, pref..	89 - 90½	Lake Sup. Corp....	26 - 27½
Locomotive, com..	59½-60½	Penn. Steel, com....	66
Locomotive, pref..	116 - 117	Penn. Steel, pref....	110½
Nat. En. & St. com.	21½-22	Warwick.....	10½-11½
Pressed St., com..	49½-51	Crucible Steel, com.	14 - 14½
Pressed St., pref..	105½-107	Crucible Steel, pref.	82½-83½
Railway Spr., com.	48 - 49	Harb.-W. Ref., com.	25½
Republic, com....	44½-48½	Harb.-W. Ref., pref.	95

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 90½, preferred 130½, bonds 105½; Car & Foundry common 69½, preferred 119; Locomotive common 61, preferred 116; Steel foundries 61½; Colorado Fuel 46½; Pressed Steel common 50, preferred 106½; Railway Spring common 49½; Republic common 49½, preferred 108; Sloss-Sheffield common 91; Cast Iron Pipe common 34, preferred 85½; Can common 12½, preferred 82½.

Dividends.—The Youngstown Sheet & Tube Company has declared the regular quarterly dividend of 2 per cent.

The Machinery Trade.

NEW YORK, September 29, 1909.

Business with machinery houses the past week showed further evidences of expanding, the sources of demand not only becoming greater and more varied, but the orders and inquiries covered more than single tools, as was the case a few months ago. This betterment in the character and increase in the volume of inquiries is exceedingly encouraging to machinery houses, who are confidently expecting much greater activity in the trade in the near future, especially when the railroads shall become an important factor, which, it is believed, is imminent. Several roads are understood to be preparing lists of their requirements. The Virginian Railroad has a list out covering about 25 tools; the New York Central Railroad has come into the market for a few tools and three traveling cranes up to 15-tons capacity, and the Intercolonial Railway of Canada has issued specifications covering a large number of tools to be installed in its shops at Moncton, N. B. The automobile industry is still an important factor in the trade, and a great deal of the machinery sold is to be used either in the building of automobiles or making the parts. The Locomobile Company and the Palmer & Singer Mfg. Company have both come into the market for a few tools.

The fall meeting of the National Machine Tool Builders' Association will be held in New York, October 12 and 13, at the Hotel Astor, Forty-fourth to Forty-fifth streets, instead of at the Hotel Imperial, as previously announced.

Many out of town men are visiting in New York at present to attend the Hudson-Fulton celebration, and they are taking advantage at the same time of visiting their New York connections and the trade in general here. A large number of them arrived on Saturday and attended the celebration at the Machinery Club to view the naval parade, and the out of town members who are registered there make the largest delegation of out of town men the club has ever seen. Manning, Maxwell & Moore, the Watson-Stillman Company and other machinery houses declared holidays on Saturday, September 25, at 11 a.m., and on Tuesday and Thursday, the 28th and 30th, from 12 o'clock noon.

Intercolonial Railway's Machinery Requirements.

The following list of tools has been issued by the Intercolonial Railway of Canada, bids on which will be received until October 11 by W. F. Taylor, general storekeeper, Moncton, N. B.:

One 90-in. or 100-in. heavy locomotive driving wheel lathe, complete, arranged to be driven by a 50-hp. direct current motor, 500 to 1000 rev. per min., and head arranged to be moved by a 7½-hp. induction motor at 1120 rev. per min. full load speed; one locomotive driving wheel quartering machine, complete for wheels up to 90 in. diameter on tread, and piston strokes from 20 in. to 40 in., arranged to be driven by two 5-hp. induction motors at 1120 rev. per min. at full load speed; one 300 ton hydraulic wheel press for wheels up to 84 in. diameter on the tread, opening in head for axles up to 12 in. diameter, to be equipped with air attachment for moving ram up to work quickly, and arranged to be driven by a 10-hp. induction motor at 1120 rev. per min., full load speed; one 48-in. vertical boring and turning mill, with one swivel head and one turret head, table 48 in. in diameter and equipped with four-jaw independent and universal chuck, each head with independent rapid transverse movement operated by friction clutches so heads may strike one another or the work without injury, and to be built so either head may be brought to center, machine to be complete in every respect and arranged to be driven by a 15-hp. direct current motor, 400 to 1600 rev. per min., and rear swing to be arranged to rise by a 3-hp. induction motor at 1120 rev. per min., full load speed; one 42-in. car wheel borer, five-jaw universal and independent chuck power, crane power hub facing attachment, arranged to be driven by a 7½-hp. direct current motor at 450 to 900 rev. per min.; one 6-ft. half universal heavy radial drill with positive tapping attachment, arranged to be driven by a 5-hp. induction motor at 1120 rev. per min., full load speed; one 5-ft. plain heavy radial drill with positive tapping attachment, arranged to be driven by a 5-hp. induction motor at 1120 rev. per min., full load speed; one four-spindle independent feed drill, capacity in steel two 2-in. holes, No. 5 Morse taper in spindles, each spindle with independent clutch drive, also independent knock-off at each spindle of the feed, arranged to be driven by a 15-hp. induction motor at 840 rev. per min., full load speed; two 18-in. single head traverse shapers, with 5-ft. bed and one table, one machine with index centers, arranged to be driven by a 5-hp. induction motor at 1120 rev. per min., full load speed, lump price for both to be named; one plain milling machine, table working surface 11½ x 41½ in., automatic positive feeds, machine to be complete in every respect and arranged to be driven by a

direct connected 5-hp. induction motor at 1120 rev. per min., full load speed; one 1200-lb. single frame steam hammer, complete; one heavy automatic cut-off saw, with table 7½ ft. long, to carry saw 36 in. diameter, countershaft on machine to be operated at 850 rev. per min. and provided with flexible coupling for direct connection to a 12-hp. induction motor at 840 rev. per min., full load speed; one vertical hollow chisel car mortiser, of capacity for chisels up to 1¼ in. sq. and 10 in. stroke, with two boring attachments of capacity for bits up to 2½ in. diameter, to be arranged for saw mortisers and borers and driven from base countershaft at rear, countershaft to run at 850 rev. per min. and to be provided with flexible coupling for direct connection to a 15-hp. induction motor at 840 rev. per min., full load speed; two 20-in. heavy high-speed lathes with 10-ft. bed, hollow spindle, taper attachment and connected gear, arranged to be driven by 5-hp. direct connected current motors, 375 to 500 rev. per min., lump price for both to be named; one spindle mud ring and flue sheet drill, with six spindles on an auxiliary cross rail, heads adjustable to 8-in. centers, with capacity 2½-in. holes, length of power feed 12 in. for each spindle, center of spindles 6 in. clear of base, table to be 24 in. in and out motion, distance between housings, 12 ft. 4 in., eight changes of speed and three changes of feed, machine arranged to be driven by a 20-hp. induction motor, 840 rev. per min., full load speed; one plate flanging clamp, 16 ft. between housings, with upper beam operated by compressed air, maximum pressure 100 lb. per square inch; one track spike machine to head and point at one operation track spikes up to 1 1-16 x 10 in. long, to be provided with automatic heading attachment so bar need only be started into machine, one pair of dies to be included to make spikes to specifications, machine to be complete in every respect, with alternating current induction motor and all electrical and mechanical gear; one 1¼-in. continuous motion riveter header to make rivets, tack bolts, &c., in one stroke, up to 1¼ in. diameter by 9 in. long, machine to be equipped with automatic feeding attachment so a bar need only be started into machine, one pair of dies to be included to make bolts to specifications, machine to be complete in every respect, with alternating current induction motor and all electrical and mechanical gear; one saw for rapid cutting of hot bar stock up to 6 in. sq., machine to be complete in every respect, with alternating current induction motor and all electrical and mechanical gear; one heavy pattern double car axle lathe, hole in center head for 3 in. diameter, arranged to be driven by a 20-hp. direct connected motor, 300 to 1200 rev. per min.; one double locomotive axle keyseat milling machine, capacity for axles up to 16 in. diameter by 9 ft. long, arranged to be driven by a 10-hp. induction motor at 1120 rev. per min., full load speed; one combination cold saw cutting off machine to carry 36-in. inserted tooth saw, with capacity to cut 11½ in. diameter round stock and 1 beams up to 24 in., arranged to be driven by a 5-hp. induction motor, 840 rev. per min., full load speed; one angle shear, with capacity for shearing up to ¾ x 6 x 6 in. steel angle bars without distorting the end of the bar of the piece cut off, arranged to be driven by an electric induction motor, 840 rev. per min., full load speed, and with friction clutch saw motor to be brought up to speed before throwing fly-wheel and starting machine; one pipe threading and cutting machine to cut threads on pipe from ¼ in. up to 2 in., with two-jaw universal chuck on front for gripping the pipe and three-jaw self-centering chuck on rear, automatic oil pumps on machine, which is to be complete in every respect with direct motor and all electrical and mechanical gear; one heavy type miller with both horizontal and vertical spindles, table with working surface 20 x 60 in., with oil groove all around, pumps and tank furnished with machine; one plain self-contained motor driven grinding machine, to swing 18 in. diameter by 8 ft. long, with a swing to 30 in. diameter for grinding locomotive valve stems and piston rods with piston heads on, supplied with plain emery wheel and also cupped or offset so load can be ground close to head, machine to be complete in every respect, with motor and all mechanical and electrical gear; one turret lathe with 28-in. swing overways, 15½-in. swing over carriage and 60-in. traverse of turret, to have a 6-in. hole through spindle taper attachment, extra heavy three-jawed scroll chuck, heavy inclined hexagonal turret with automatic stops for each face and independent rapid traverse of turret, carriage provided with four-tool turret tool post, which will face full swing of lathe; 50 pneumatic tools as follows:—reversible drills, with No. 4 Morse taper socket, to drive up to 3-in. twist drill, speed running light, with 80-lb. pressure, 160 rev. per min., weight not more than 60 lb., quote lump price for both; five drills with No. 4 Morse taper socket to drive up to 2½-in. twist drill, speed running light with 80 lb. pressure, 240 rev. per min., weight not more than 35 lb., quote lump price for five; 13 drills with No. 3 Morse taper socket to drive up to 1¼-in. twist drill, speed running light, 80-lb. pressure, 370 rev. per min., weight not more than 35 lb.; two drills with No. 2 Morse taper socket, to drive up to ¾-in. twist drill, speed running light with 80-lb. pressure, 450 rev. per min., weight not more than 15 lb.; four corner drills with No. 3 Morse taper socket to drive up to 1¼-in.

twist drill, speed running light, with 80-lb. pressure, 370 rev. per min., weight not more than 35 lb.; one heavy chipping and calking hammer, 1 11-16 in. piston by 4-in. stroke and 1080 blows per minute, weight not more than 11½ lb.; 14 medium chipping and calking hammers, 1 11-16 in. piston by 3-in. stroke, 1500 blows per minute, weight not more than 10½ lb.; seven light chipping and calking and flue beading hammers, 1 11-16 in. piston by 1¾-in. stroke, 2000 blows per minute, weight not more than 9¾ lb.; one hammer for driving rivets up to ¾-in. diameter, 1 11-16 in. diameter piston by 6-in. stroke and 700 blows per minute, weight not more than 22 lb.; one jam riveter with capacity up to ¾-in. rivets, 1 5-16 in. piston by 5-in. stroke, length over all, 20 in., weight not more than 39 lb.; two 20-in. heavy high speed lathes, with 10-ft. bed, hollow spindle taper attachment, arranged to be driven by a 5-hp. direct current motor, 375 to 1500 rev. per min., quote lump price for both.

The Central Railroad of Georgia has finally granted an appropriation at the request of its engineering department for \$250,000, which is to be spent in further improvements to its shops at Macon, Ga., and an extensive addition to its Savannah, Ga., plant. A large part of this money, it is understood, will go for machine tools, while some power additions are also to be made. It will be remembered that the railroad company recently gave some contracts for extensive shops at Macon, which are now under way, and part of this appropriation will be used to add further equipment to these shops.

The International & Great Northern Railroad is understood to have let contracts for the construction of its new shops and roundhouse at Taylor, Texas. These shops will entail the expenditure of about \$60,000.

The Railway Steel Spring Company, New York, will rebuild the part of its plant at Pittsburgh, Pa., recently destroyed by fire, but the amount and character of new machinery that will be required for equipping the new structure has not yet been definitely decided. A considerable portion of the required machinery will be of special construction, which the company will probably build itself. The engine and boilers were not damaged.

The Pierce Arrow Motor Car Company, Buffalo, N. Y., is preparing plans for several large additional buildings which it will erect this fall, doubling the capacity of its already large plant at Elmwood avenue and the New York Central Railroad Belt Line. The buildings will be of reinforced concrete, steel and glass, to conform with the present buildings. A large amount of additional machinery and equipment will be required.

Rice & Adams, manufacturers of dairy machinery, Buffalo, N. Y., will add another story to its factory, 50 x 150 ft., at Chandler street and the New York Central Railroad Belt Line, and will install additional machinery.

Henry L. Doherty & Co., engineers, 60 Wall street, New York, will buy considerable machinery and railway equipment for a large street railway in course of construction in the West.

The Palmer & Singer Mfg. Company, New York, has inquiries in the market for a few machines for the new plant it has in course of construction at Astoria, L. I. It is understood that the inquiries for these machines will be followed shortly by inquiries for a great deal of additional machinery to equip the plant, and it is thought that instead of sending out a list of its entire requirements the company will buy a few tools at a time, as they can be installed. The new plant will be 115 x 181 ft., three stories, and will be used principally for assembling purposes.

The Citizens' Light, Heat & Power Company, Montgomery, Ala., is issuing \$500,000 in bonds, the proceeds from the sale of which are to be used for making improvements to the system. It is the intention to install at an early date a 2000-kw. steam turbine, 2200-volt two-phase 60-cycle alternator, 1800 hp. of water tube boilers, high-pressure piping and auxiliary equipment.

The time for receiving bids by the Board of Sewer Commissioners of Batavia, N. Y., for the construction of a system of sewers, has been extended from September 25 to October 14. The work is divided into five sections, covering the excavation, piping, pumping well, etc., and in addition there will be required one 100-hp. Corliss engine, one 250-hp. Scotch marine boiler, three centrifugal pumps and accessories.

The Special Water Committee of Christiansburg, Va., will receive bids until October 6 for laying a quantity of cast iron pipe. Howard Murphy, engineer, Christiansburg, invites correspondence as to plans on reinforced concrete distributing reservoir, earthen collecting reservoir, brick pumping station and steam, gasoline and electric pumping machinery, the contemplated capacity of the works being from 500,000 to 1,000,000 gal. per day.

Business Changes.

C. E. Carpenter has resigned as sales manager of Schuchardt & Schutte, 90 West street, New York, and W. L. Kerlin has resigned his position as machinery salesman in that department. Mr. Carpenter and Mr. Kerlin will go into the machinery business for themselves.

Ernest T. Mathewson has disposed of his interest in the

Spooner-Mathewson Company, machinery dealer, 90 West street, New York, to Henry W. Spooner, and the latter will continue the business at the old address. Mr. Mathewson intends going into business for himself.

Chicago Machinery Market.

CHICAGO, ILL., September 28, 1909.

Machinery orders are coming out in greater number from miscellaneous manufacturing interests, which, until within a few weeks ago, contributed very little to the general volume of business. While the automobile industry continues in the lead as a buyer of machine tools, its position in this respect is not of such overshadowing importance as it was during the early months of the year. There is also less irregularity in the distribution of business, a condition that is plainly significant of an increasing volume of trade. Business with some houses is less active than others, but the difference is by no means as pronounced as it was, and all reports agree in representing decided improvement. A number of scattered orders were placed last week by the various railroads, including the Chesapeake & Ohio, Baltimore & Ohio and New York Central. These purchases evidently include machines needed to meet pressing needs arising from increased shop activities, which, judging from the liberal orders being placed for car equipment and track supplies, will be productive of still more business. There is more inquiry for second-hand tools, and several sales of fair size are embraced in recent transactions. In some instances buyers preferring new machines have purchased second-hand equipment for the sake of securing immediate delivery. This is particularly true of automatic screw machines and certain makes of millers.

The leading makers of electric motive power equipment are well sold up, and in some cases satisfactory deliveries are hard to obtain. Difficulty in securing skilled mechanics seems to extend to this industry as well as to that of machine tool building. The present month bids fair to be one of the best of the year, and but little complaint is heard as to the development of business in any branch of the machinery trade.

Because of increased demand for its product, the Wisconsin Auto Supply Company, Two Rivers, Wis., has decided to enlarge its plant and increase its equipment to provide facilities for the building of gasoline engines both for automobiles and farm use.

The recently established furnace department of the Detroit Stove Works, Detroit, Mich., has developed to such an extent as to require a separate foundry and equipment to keep step with growing demand. For this purpose a five-story building, 50 x 200 ft., will be erected on a site adjoining factory No. 3 of the stove plant. It will be fully equipped with the necessary machinery for the manufacture of furnaces and handling of heavy castings. With a view to future requirements, the company has also purchased adjoining property 175 ft. front by 880 ft. deep.

As a result of a deal just closed the Stover Motor Car Company, Freeport, Ill., has been taken over by the Buda Foundry & Mfg. Company, head offices, Chicago. All of the patterns for the gasoline motor car heretofore made by the former company will be transferred to the factory of the Buda Foundry & Mfg. Company at Harvey, Ill., in the motor car department of which this equipment will be built. The motor in question is a passenger car ranging in capacity from 6 to 25 passengers. Facilities of the Harvey plant have recently been increased by the installation of new equipment at a cost of about \$100,000. Quite a number of machine tools were included among the purchases made.

The shop and forge room of the Manual Training High School, Evansville, Ind., of which Fred E. Hand is director, is to be fitted with modern equipment. All machines are to be motor driven, with individual direct current 220 volt motors, for which current will be supplied from a power and heating plant now being installed by the school. An order for Sturtevant down-draft forges has already been placed. Equipment for the machine shop will be purchased next year.

A recent purchase of the Chicago, Indiana & Southern Railroad Company for Gibson, Ind., shops included one 18 in. x 8 ft. Hendey Norton improved screw cutting lathe, one 24 in. x 12 ft. Schumacher & Boye screw cutting engine lathe, one 42 in. x 16 ft. geared head engine lathe, and one No. 2 improved cutting off saw.

Under a consolidation of Monmouth, Ill., public service utilities the plants of the Monmouth Gas & Electric Company and the Searless Power Company have been taken over by the Modern Public Service Company, of which W. H. Schott of the Schoot Engineering Company, Chicago, is president. It is the purpose of the new company to make extensive improvements in all of these properties. A new central power station will be built, doubling the present capacity, and a new gas plant will also be installed. In addition to furnishing current for motive power to all of the

principal factories in Monmouth, a central station heating system covering all of the business portion of the city and part of the residence district will be put in. Work on these improvements will begin at once. A large amount of equipment will be required for the rehabilitation and enlargement of these plants, none of which has as yet been purchased.

The Yellow Pine Paper Mill Company, Orange, Texas, has completed plans for the enlargement of its plant, which, when executed, will represent an investment of about \$1,000,000. Orders, it is stated, have been placed for all of the machinery except the electrical equipment, offers upon which are now being considered. The work of construction is under the direction of E. S. Farwell, engineer.

Sealed proposals in triplicate are invited until October 13 for the installation of steam heating plants complete in officers' quarters No. 1 to 8, inclusive, and No. 31 and 32 Fort D. A. Russell, Wyoming. Bids should be addressed to V. K. Hart, Captain Fifteenth Infantry, Acting Quartermaster, U. S. A., in charge of construction, room 3, Keefe Hall, Cheyenne, Wyo.

The Crescent Company, manufacturer of electrical supplies, formerly located at 106 South Clinton street, Chicago, has moved to 518 West Monroe street.

The Chicago store of the Reeves Pulley Company, heretofore located at 68 South Canal street, has been moved to the northeast corner of Clinton and Monroe streets, where more commodious quarters have been secured.

Cleveland Machinery Market.

CLEVELAND, OHIO, September 28, 1909.

Business with the local machine tool houses continues very satisfactory. Although no large orders or inquiries came out during the week all the dealers report the receipt of a good volume of small orders, mostly for one, two or three tools. Little business has come this month from the automobile industry, nearly all of the automobile manufacturers having made their purchases for their coming season's requirements during July and August. With the enlargement of several plants being projected, however, it is expected that there will be considerable additional business from the automobile trade within the next few months. The condition of the automobile industry is regarded as most satisfactory. As soon as the rush for this season's deliveries began to let up somewhat manufacturers started on their next season's output, so that the activity in the manufacturing end has experienced no check and plants continue to run at full capacity, all preparing for a larger output next year than during the present year. In the machine tool trade the volume of scattering business from various sources is steadily increasing. The demand at present is largely for small or medium sized tools, the most plentiful orders being for lathes, shapers, drill presses, milling machines and boring mills. In nearly every case quick delivery is desired. The general manufacturing situation in metal working lines continues to improve and this is resulting in the placing of orders for additional equipment. Small machine shops have become quite busy the past few weeks and the demand for machine tools from this source has become quite active. The demand for second-hand tools is good and dealers are able to move quickly the limited supply that is being placed on the market.

Nearly all the local machine tool builders are running their plants on full time and some are being operated overtime. Some have about all the orders they can fill during the balance of the year. Business is steadily improving with makers of heavy handling, rolling mill, mining and other special machinery. A number of inquiries are pending for hydraulic turbines, and a number of water power developing projects that are coming out indicate a good demand for this class of equipment.

In the foundry trade the demand for steel castings shows a decided improvement and some of the large local foundries have all they can do. The demand for light gray castings continues heavy.

The Wellman-Seaver-Morgan Company, Cleveland, is crowded with work in both the structural and steel castings department, and is running its local plant night and day. This company reports a very good demand for steel plant equipment and a good volume of orders for mining machinery. It is now figuring on a number of hydraulic turbines for extensive water power development. Among the large orders recently received are the following: An electrically operated direct unloading and stocking bridge of 4-ton capacity for ore for the Algoma Steel Company, Sault Ste. Marie, Mich.; 12 Hughes mechanical 10-ft. gas producers for the open hearth and heating furnaces at the new plant of the Ford Steel Wheel Company, Butler, Pa.; six special electrically operated wheel blank manipulators, five traveling and one stationary, for the Standard Steel Works, Burnham, Pa.; six large Porter patent water sealed gas reversing valves, three 36-in. and three 42-in. specially hydraulically

reversed, for the new plant of the InterOcean Steel Company, Chicago Heights, Ill.

The National Steel Products Company, recently organized in Cleveland, has increased its capitalization from \$25,000 to \$50,000 and will locate a plant in Lorain, Ohio, for the manufacture of spark plugs for automobiles and gas engines. The company has been operating in a small way in Lorain for some time, testing its products. The Chamber of Commerce of that city has taken up the matter and secured the subscription of additional capital needed. The company now has under consideration the selection of a site for its plant. Charles S. Smith is president and A. J. Hayes secretary.

W. A. Williams and O. D. Morgan, proprietors of the Morgan & Williams carriage works, Warren, Ohio, announce that they will establish a plant for the manufacture and repair of automobiles.

The McNeil Boiler Company, Akron, Ohio, is enlarging its plant by the erection of two buildings 50 x 100 ft., which have just been completed, and plans have been prepared for another building 80 x 150 ft. At a recent meeting the directors voted to increase the capital stock from \$100,000 to \$150,000.

The Ohio Ceramic Engineering Company, Cleveland, reports a steady improvement in orders for industrial cars and the company has become quite busy in that department. The company has recently added some new tools to its machine shop equipment.

The G. H. Williams Company, Cleveland, maker of clam shell buckets, reports a good demand for its buckets from contractors and other users. Since August 1 the company has taken orders for 35 buckets ranging in size from $\frac{3}{4}$ to $3\frac{1}{2}$ yd. Among recent shipments were four large buckets for Government work in Panama.

The Cleveland Steel Company, Cleveland, Ohio, has recently made changes and additions to its plant, increasing its capacity about 50 per cent. The rolling mill capacity has not been enlarged, the additions being to the furnaces and shearing capacity. New shears and two new furnaces have been installed. The plant now has a capacity of about 4000 tons per month.

The King Bridge Company, Cleveland, is planning the erection of a producer gas plant. The company has purchased one unit, a 300-hp. Alberger four-cylinder double tandem gas engine to operate on natural gas, and it is understood it will be in the market in a short time for three additional units.

The Buckeye Rubber Company, Akron, Ohio, has awarded a contract for a new factory building 40 x 191 ft., three stories.

The Best Foundry Company, Bedford, Ohio, has awarded the contract for the erection of a new foundry addition to the Hunkin Bros. Construction Company of Cleveland. The building will be about 180 x 200 ft.

The Toledo Lamp Company, Toledo, Ohio, has commenced the erection of an addition 80 x 300 ft., four stories, to be used for the manufacture of tungsten electric lamps.

The Star Drilling Machine Company, Akron, Ohio, is completing an addition to its plant that will increase its capacity over 25 per cent.

Milwaukee Machinery Market.

MILWAUKEE, WIS., September 28, 1909.

The quantity of second-hand machine tools offered recently has been much larger, due to the replacement, in many shops, of old equipment by new apparatus of improved types. The used tools, however, find ready sale, and any machinery of general utility, or having a wide range of service, is snapped up almost at once, if offered at a reasonable price.

Steel foundries continue to do a large business.

Of late considerable attention has been directed to the possibilities of the electric furnace in the manufacture of crucible steel, and there is a tendency to earnestly consider the installation of small furnaces; but the large first cost impels hesitancy in adopting untried equipment. If some manufacturer of this apparatus felt warranted in setting up a furnace at some central point, say, Chicago, and invited steel foundries to inspect it in actual operation, there can be no question but that the introduction of such furnaces would be greatly promoted. It seems to be the generally accepted view that electric furnaces will never replace open hearths or converters, but that their true function lies in supplementing these. For crucible steel, however, the advantages of the new type of electric furnaces are recognized.

One result of the extensive tests and experiments conducted by progressive manufacturers during the dull period will be felt shortly by a gradual stiffening of specifications for steel and other metals, and the mills best prepared to meet the new requirements will be in a favorable position. The time has come when quality will govern purchases far more than heretofore, and the matter of price alone will be less considered.

The growth of the brass and aluminum using industries

in this section forms the subject of considerable comment; and there is every indication of its further large extension during the coming year. Concerns catering to shops which utilize these metals in the production of parts and fittings will find the field here well worth cultivating.

An interesting feature of the week just closed has been the visit of the Japanese Commercial Commission, which made a tour of the large industrial shops, concluding with the inspection of the West Allis Works and entertainment at the Allis-Chalmers Club. Many of the visitors are connected with large manufacturing plants, electric power and railroad systems, mines, mills, &c., in which Milwaukee-built machinery is extensively used. In fact, it is claimed by local authorities that this city enjoys a trade with Japan, Corea and Manchuria not equalled by that of any other industrial center, and it is constantly being expanded.

From Ashland, Wis., it is reliably reported that a company headed by Thos. H. Gill contemplates the erection of a blast furnace on the Penoka Range.

A pumping plant and water distribution system will be constructed at Eagle River, Wis. W. C. Fraser, Rochester, Minn., has been retained by the city as consulting engineer.

Steam turbines and generators with a total capacity of 2000 kw., will be added to the power plant of the Paine Lumber Company, Oshkosh, Wis.

The Bain Wagon Company, Kenosha, Wis., is equipping its extension with electric motors.

B. E. Dwinnell & Co., Amherst, Wis., have had plans prepared for enlarging their hydraulic power plant by the construction of a concrete flume and the installation of new turbines, electrical machinery, &c.

The Fuller & Johnson Company, Madison, Wis., maker of gasoline engines and farm machinery, is proceeding with a large addition to its shops.

The Western Machinery & Supply Company, which recently started in business here, has developed a large trade in both new and used machine tools.

A new boiler house is to be erected at Cudahy, Wis., by the Milwaukee Vinegar Company and modern steam generating equipment purchased.

The Wrought Washer Company, Milwaukee, has started work on a new rerolling mill and a new factory.

Iron and steel contracts covering extensive alterations and additions to the North Point lighthouse, near Milwaukee, have been awarded to the Russell Wheel & Foundry Company, Detroit, and the Milwaukee Bridge Company.

A boiler and an automatic high-speed engine will be required for the power plant of the Fond du Lac Mirror Company's new factory at Sheboygan, Wis.

From La Crosse, Wis., it is reported that the Winona Railway & Light Company will be in the market this fall for boilers, furnaces, stokers and coal conveying apparatus.

The Owen Thomas Motor Company, manufacturer of automobiles, is said to contemplate building a plant of considerable size at Janesville, Wis.

Construction work on the new shop of the T. L. Smith Machine Company will begin in about a month, and some of the equipment required is understood to have been already contracted for.

During the recent visit of the Japanese Commercial Commission, the Bucyrus Company, South Milwaukee, had in operation one of its new wrecking cranes and a steam shovel of the type now being extensively used at the Culebra cut in Panama.

The authorities at Belmont, Wis., have awarded contract for a 50,000-gal. steel tank and tower to the Chicago Bridge & Iron Works.

Two large companies here, manufacturing compressors for air brake service, are putting on the market a portable outfit for use in automobile assembling shops and garages, and the production of this motor driven equipment is assuming considerable proportions. Another company does quite a business in seamless steel tanks for charging service, and other local concerns are preparing to enter this field.

The International Harvester Company has entered upon the manufacture, at its Milwaukee Works, of 20 to 50 lamp gasoline engine driven electric lighting units for isolated plants and other buildings.

The Superior Iron Works Company, Superior, Wis., will put a new type of steam plow on the market, a subsidiary organization, known as the Superior Tractor Company, having been organized for that purpose.

The new shops of the Falk Company and American Oxy-hydric Company are nearing completion and will be fully equipped this fall.

Cincinnati Machinery Market.

CINCINNATI, OHIO, September 28, 1909.

The week has been a particularly good one with tool concerns making the standard lines, and the automobile manufacturing industry maintains its record for furnishing the major portion of this business. Local tool manufacturers estimate that from 50 to 75 per cent. of the business now going in such tools as lathes, upright drills and milling

machines comes from the automobile industry. An encouraging feature of the tool trade as a special branch is the tendency of old customers to come into the market for needed tools, which was promised in various ways during the two years' depression, but as a rule rarely materialize. The tendency of manufacturers is to discourage large stock orders, and where dealers were given large license in the matter of tool consignments during the stirring times of early 1907, such dealers are restricted at this time, which begins to assume much the same brisk proportions of the well remembered period mentioned. Manufacturers are also assuming a more independent attitude with certain customers who have been given prices on a line of tools covering several sizes and who divide their orders at the last moment. One large manufacturer in this field turned down a good sized order because it had been divided, giving another concern a part of the larger machines specified in the list. A number of the larger local manufacturers have considerably changed their system of selling, the most noticeable being the tendency to retain machines for stock, thus facilitating deliveries of direct business, much of which had to be lost before because of the inflated condition of order books.

In many parts of this district the shop conditions of 1906 and early 1907 are being repeated. The tool concerns are running at nights, and adding men as fast as they can secure them. The scarcity of mechanics is none the less noticeable, and every effort is being made by the Cincinnati branch, National Metal Trades Association, to secure these much needed shop assistants.

The Le Blond Machine Tool Company has secured the order for 40 lathes and 20 milling machines needed by the Metzger Motor Car Company, Detroit. The lathes are of the 16, 18 20 and 34 in. types; the millers the Le Blond Nos. 2, 3 and 4. Deliveries are to be made in 60 days. The Le Blond Company reports business entirely satisfactory.

A good part of the Fiat Automobile Company's list specifies Cincinnati made machines. The confirmation of an order for about a dozen upright drills was received by a large Cincinnati manufacturer on the 25th.

E. T. Hendee of Chicago, representing one of the largest firms of machinery dealers in the country, has been in Cincinnati investigating conditions, with a view to locating here a large manufacturing plant which would turn out some types of tools and machines which are listed as specialties. It is understood that Mr. Hendee has some statistics and data entirely satisfactory to him and his firm, and through some of the representative tool manufacturers and machinery makers who chaperoned him about while here outlined some plans that will result in the addition of a new plant to either the Oakley, Camp Washington or East End group.

A large manufacturer of lathes announces that business has been so satisfactory to his concern that with the shop on overtime and a full force deliveries may not be promised on standard sizes earlier than December.

Practically all jobbing foundries in this section are running full time and with a full force.

Dealers are having a good business, being confined largely, however, to new and standard types; second-hand machines are not in active demand.

M. L. Andrew & Co., Cincinnati, builders of multiple wood boring and iron drilling machinery, are running full force and full time and next week expect to put on an extra force. This company is having a splendid run on its new multiple boring machine, which is in demand among the furniture manufacturers, makers of pianos, typewriters, &c.

The Champion Tool Works Company, Cincinnati, builder of lathes, is running a full force on full time, 55 hr., and the coming week expects to work 12 hr. extra time until it gets caught up on deliveries.

At the plant of the G. A. Gray Company, Cincinnati, builder of planers, a full force is engaged on full time with orders, and President Henry Marx announces that the company could use more men if it could get them. This company will raise its pattern shop building, adding a brick story and providing much needed room.

The shops of the Cincinnati-Bickford Tool Company resemble in point of activity the busy months of 1907. Among the special machines noticed ready for shipment was a large upright drill built low and specially rigid for the battleship North Dakota.

Greaves, Klusman & Co., Cincinnati, builders of engine lathes, pattern lathes and woodworking machinery, are bringing out a new lathe, a 14-in., which will be the smallest of their line, but which is to contain a number of new features.

Work on the independent sheet and tin plate plant under construction at Weirton, W. Va., is being rushed in order that operations may be commenced before cold weather arrives.

It is estimated by the contractor of the new steel plant under way at Kenova, W. Va., that the work of construction will be finished by October 10, after which the machinery will be installed immediately and the plant made ready for operating early in the year. It is the intention of the builders to install a wire mill, but this will not be done until the other departments are well under way.

The Olds-Oakland Motor Company has been chartered at Cincinnati, with a capital of \$10,000, to engage in the automobile business. The incorporators are W. G. Welbon, L. M. Schulte, Alfred C. Cassatt, W. C. Rippey and George Stugard.

Important additions are under way at the plant of the Ohio Steel Foundry Company at Lima, Ohio, which is reported to be running to capacity and on full time.

A new company recently incorporated under the name the Orr Machine & Foundry Company by Simon Linser, Sr., Clyde Reasoner, Harry T. Orr and Charles Deiterly of Zanesville, Ohio, and George Deiterly of Chillicothe, will reclaim iron from waste lands and fills. The Orr foundry at Putnam, Ohio, is to be moved to the new location.

Word from the National Rolling Mill Company's plant in Mansfield, Ohio, indicates that the capacity of that plant is being increased to 700 tons of sheet steel per month and that two more stands of rolls are being installed. A new galvanizing department is also under way.

The plant of the Thomas Steel Company at Niles, Ohio, was started in its entirety September 13. The additional four hot mills involved makes it a 10-mill plant, and the outlook is bright for a steady run for many months.

President George M. Verity of the American Rolling Mill Company, Middletown and Zanesville, Ohio, advises that both mills are running full time with three full shifts, and that the company is building an additional open hearth furnace at the Middletown plant.

Philadelphia Machinery Market.

PHILADELPHIA, PA., September 28, 1909.

Merchants report conditions as still being of an irregular nature. During the past two weeks there has been a lull in the demand, inquiries having fallen off. The same conditions, however, are not generally noted by machine tool builders who are taking on a fair volume of business, which, however, is not restricted to this immediate vicinity. Transactions have been along rather narrow lines; the bulk of the day to day sales have been of single tools, usually for prompt shipment. Delayed deliveries, which have developed in a few lines, have to a considerable degree interfered with the sale of such tools, and the purchase of other makes has been made where prompt shipment could be obtained. Machine tool manufacturers are gradually increasing their working forces, and while but few of the larger local concerns are as yet operating at full capacity, conditions are rapidly approaching the normal. Many of the smaller ones, as well as those making equipment of a special character, are operating at full capacity, and some plants are running overtime. Inquiries are confined, for the most part, to small propositions, the demand being principally for single tools of a medium class. A few somewhat sizable propositions are under consideration, rather for extensions, than for strictly new enterprises. A nearby agricultural implement manufacturing concern has purchased a fair quantity of tools and other equipment, while several small shop outfits have been closed by dealers.

The foreign demand for tools of the standard types shows practically no betterment. That for special tools has been somewhat better, and some little business has been transacted. Manufacturers of power equipment doing a regular export trade report orders more numerous and of better size.

For some classes of second-hand machinery there has been a fair demand, while for others little inquiry is noted. Day to day business is somewhat irregular, and recent transactions have been of an unimportant character. The demand for second-hand engines drags, while that for boilers of the medium horsepower shows a trifle more activity.

The foundry trade continues to improve. There is a better demand for the general run of gray iron castings, and an improvement is noted in the volume of business developing for machinery castings. Steel casting plants are more fully engaged and report business of a more satisfactory nature. Prices of both steel and gray iron castings show an upward movement, owing mainly to the fact that raw materials have been steadily advancing.

The contract for a four-story addition to the plant of the Schutte & Koerting Company, Twelfth and Thompson streets, Philadelphia, has been awarded to Fred A. Havens & Co.

Proposals will be received at the office of John M. Scott, 625 Walnut street, Philadelphia, until October 7, by the commission appointed to erect the buildings for the Institute for the Feeble Minded and Epileptics, near Spring City, for the erection and equipment of two dormitory buildings, together with the necessary conduits, &c. Plans and specifications may be obtained from Philip H. Johnson, architect, upon payment of a fee to insure their return.

The Energy Elevator Company is running its plant at full capacity in every department. The demand for electric

and hand power freight elevators has been increasing steadily, and a good number of orders have been booked from customers in the South and West. The trade in this immediate vicinity also shows a decided betterment.

The Baldwin Locomotive Works has authorized the purchase of a considerable quantity of miscellaneous equipment, both for its local and Eddystone plant. Full particulars are unavailable, but molding machines, bending machines, forging apparatus and miscellaneous machine tools are included in the list. The company is steadily increasing its working force, a total of 8500 employees now being engaged at the various plants on a 10-hour per day basis. Business conditions are getting distinctly better; there is a much larger inquiry for locomotives, and some fair sized orders have recently been taken, including one for 34 engines for the Chicago Great Western Railroad. The Atchison, Topeka & Santa Fe has increased its recent order for nine engines to 18. Orders for single engines are numerous.

The Standard Pressed Steel Company, Philadelphia, is running its plant overtime, in order to meet the demand for its various products. The export trade is showing a material betterment; orders are more numerous and of better size. Good bookings have recently been made for pressed steel shaft hangers for shipment to Holland, Belgium, Switzerland, Norway, Austria and various South American countries. An excellent demand is reported from machine tool builders for the Hallowell countershaft hanger.

Coal mining, saw mill and power machinery will be required next spring by the Saxman Coal & Coke Company, Philadelphia, which has been organized to develop a large property acquired in Nicholas County, W. Va.

New England Machinery Market.

BOSTON, MASS., September 28, 1909.

While the machinery dealers report no important increase in orders, the average volume of business is a trifle better. Large users of machine tools are buying rather more freely, but no large lists are out, nor are any in view in New England for the early future. The machinery builders continue to receive large numbers of orders. Those who accumulated stocks are rapidly disposing of them, it being an important advantage, apparently, to be able to make prompt shipment in sizable lots. Considerable business has been booked by some New England dealers in the textile cities, notably in New Bedford, Mass., where new mill construction is proceeding on an enormous scale. The additional space will mean the employment of 12,000 hands above the number which has been included previously in the mill payrolls. Fall River and Lawrence, Mass., are also placing some business with the dealers, and scattering mills through New England total considerable purchases.

The Automatic Chuck & Tool Mfg. Company, Pawtucket, R. I., has established works on Cottage street in that city and has just placed a sizable order for machinery with a Boston house. The company will manufacture the Thompson automatic tapping chuck and special tools and fixtures.

The plant of the Corwin Mfg. Company, Peabody, Mass., formerly the Vaughan Machine Company, manufacturer of leather working machines, has been sold at auction to Mr. Reynolds of the Reynolds Knitting Mills, Ipswich, Mass. It had been expected that the machinery would be disposed of individually or in small lots, and it is still hoped in the trade that such will be the ultimate outcome of the transaction. It was a foreclosure sale. The price paid by the single bidder was \$100,000. This company has built some machine tools from time to time, including shapers and boring machines, and has more recently gone in for automobiles and trucks and printing presses, but leather working machinery constitutes the regular line.

The Danvers Iron Works, Danvers, Mass., is occupying its new fireproof foundry, which replaces buildings destroyed by fire some months ago. The company manufactures wrought iron spikes, railroad tie rods and similar products.

It is said to be very unlikely that the business of the Nichols & Langworthy Machine Company, Hope Valley, R. I., will ever be resumed. The probability is that the equipment and remaining buildings will be sold in the process of liquidation. At the present time James M. Scott, Providence, R. I., the receiver for Rhode Island, is operating the shops, employing a small force of men in finishing a number of steam engines, parts of which were completed before the fire, and some repair work is being done. When this is completed the shops will be closed, probably for good. The business is a very old one, having been established about a century ago. For years the works were widely known for its steam boilers and vertical steam engines. It is understood that the Dock gas engine, which has been built during recent years at the Hope Valley plant, will be manufactured by a new company, to be located at New London, Conn., to be known as the Dock Gas Engine Company. A plant has been secured. E. T. Jochen, president of the Nichols & Langworthy Company, is at the head of the new project. Both stationary and marine types will be included in the product.

The business of the Conant & Donelson Company, Greenfield, Mass., manufacturer of screw cutting tools, with screw plates as a specialty, will be removed to Conway, Mass., in the near future. A new plant is being built in that town, consisting of a two-story brick structure 45 x 110 ft. The business has grown rapidly and the new quarters will permit of the necessary enlargement of manufacturing facilities.

The Beaman & Smith Company, Providence, R. I., has brought out two new special machines for use in the manufacture of automobiles. One is a nine-spindle milling machine, with six horizontal and three vertical heads, for machining engine cylinders; the other a four-spindle milling machine for milling axles, handling simultaneously both forks and two spots.

Stone & Webster, Boston, Mass., have made an offer of \$300 a share for the stock of the Worcester Electric Light Company, Worcester, Mass., and some of the stockholders, who prefer to retain the business under Worcester ownership, have made a counter offer for the securities. Whichever the owners may be, it is understood that the plan is to develop the property further, with the idea of giving larger service and cheaper rates to consumers, especially for industrial purposes. The plant is modern, but the management has been a very conservative one. The development should mean an increase in power producing equipment.

The local steel merchants are complaining of the failure of the mills to make deliveries. This applies especially to contracts placed at low prices and to smaller sizes. In some cases merchants have been compelled to fill contracts with customers from the warehouses. Business is very good, the demand coming from a wide range of industries. Deliveries are best on structural steel and hoops. The current price for bars in Boston is \$1.80, with the prospect of another increase, according to private advices received from New York.

The Barnett Drop Forging Company, Easthampton, Mass., will build a brick addition to its plant, 30 x 106 ft., for its hardening and pickling department, and a power house in which will be installed a 150-hp. boiler and a 75-hp. engine. The company is equipped with the heaviest drops and will shortly put in two additional machines, one of 4000 lb., the other of 2000 lb. The company reports business as greatly improved, with bright prospects.

Arrangements have been completed under which the Fairbanks Company becomes the exclusive selling agent of all the products of the Pratt & Cady Company, Hartford, Conn., comprising a complete line of steam and water valves and hydrants.

Henderson Bros., Waterbury, Conn., manufacturers of tumbling barrels, are contemplating a large addition to their factory.

The Swift-Waters Company, Berlin, Conn., is equipping its new factory and will soon begin the manufacture of hardware specialties. The company will also do light manufacturing under contract with outside parties, as well as tool and die work.

The Hartford Machine Screw Company, Hartford, Conn., is to largely increase its manufacturing space to afford facilities for building a new automatic screw machine, to bring its production up to two machines a day. The space, 80 ft. long, between the Capitol avenue four-story building and the River building is being built up, which will make the new building 290 ft. long and give 26,500 sq. ft. of new floor space.

The Hartford Auto Parts Company, Hartford, Conn., has increased its capital stock from \$50,000 to \$100,000. The business has increased rapidly and during the past few months large contracts have been obtained, affording sufficient work to keep the plant busy for seven or eight months to come.

The Whitney Mfg. Company, Hartford, Conn., is planning to erect a temporary building which will give 6000 sq. ft. of floor space, and proposes to make a permanent addition to the main building next spring if it then looks advisable to do so. The temporary building will be of great advantage during the coming winter, the company wishing to do everything possible in order to give customers as prompt deliveries as possible. Additions to equipment will be made and probably some machines will be run overtime. The newspaper report that this plant is running 24 hours a day is an exaggeration.

The Draper Company, Hopedale, Mass., manufacturer of textile machinery, will erect a new building, 80 x 140 ft., four stories.

The Connecticut Company, which operates a great street railway system in southwestern Connecticut, will establish a new power station at Waterbury, which will have in the beginning a 3000-hp. generator set. It is planned to duplicate this equipment later. Bigelow boilers will be installed.

Additions to general manufacturing plants announced include the following: National Hat Company, Danbury, Conn., one-story addition, 28 x 50 ft.; Lee & McLaughlin Company, Danbury, Conn., new power house; Automatic Printing Company, Bridgeport, Conn., addition, 30 x 50 ft., two stories (this company will install a gas engine); New Bedford & Agawam Finishing Company, East Wareham,

Mass., textiles, main building, 103 x 282 ft., two stories, with one-story extension, 77 x 181 ft., and power plant and storehouse, all of brick, with steel beams; Ashland Cotton Company, Jewett City, Conn., two-story brick addition, 100 x 200 ft.; Glendale Elastic Fabric Company, Easthampton, Mass., three-story addition, 30 x 40 ft.; New England Cotton Yarn Company, New Bedford, Mass., additional story to No. 3 Bennett mill, 124 x 370 ft.

Government Purchases.

WASHINGTON, D. C., September 28, 1909.

All bids have been rejected on class 1, two air compressors, for the Isthmian Canal Commission under opening of August 23, Circular No. 527. New bids will be called for not limiting the size of the cylinders, the capacity to be 2700 cu. ft. per minute.

The following bids were opened September 21 for machinery for the navy yards:

Class 1.—One three-motor overhead electric traveling crane—Bidder 3, Alliance Machine Company, Alliance, Ohio, \$2855; 80, Henshaw-Bulkeley & Co., San Francisco, Cal., \$2855; 126, Modern Steel Structural Company, Waukesha, Wis., \$3490; 137, Niles-Bement-Pond Company, New York, \$2475; 193, Whiting Foundry Equipment Company, Harvey, Ill., \$2160.

Class 2.—One motor driven, two-plunger, self-acting hydraulic pump—Bidder 80, Henshaw, Bulkeley & Co., San Francisco, Cal., \$726; 195, Watson-Stillman Company, New York, \$700.

Class 11.—Eight vertical duplex direct acting steam pumps—Bidder 14, Blake & Knowles Steam Pump Works, New York, \$1248; 41, M. T. Davidson Company, Brooklyn, N. Y., \$1500; 47, George T. Dow Pumping Engine Company, San Francisco, Cal., \$1199.50; 201, Warren Steam Pump Company, New York, \$1340.

Class 32.—Electric motors and spare parts—Bidder 45, Diehl Mfg. Company, Elizabethport, N. J., \$2332.19; 73, General Electric Company, Schenectady, N. Y., \$2275.96 and \$2089.96.

Class 101.—One extension gap lathe—Bidder 63, Fairbanks Company, New York, \$2477; 64, Frevert Machinery Company, New York, \$2506; 128, Manning, Maxwell & Moore, New York, \$2650; 137, Niles-Bement-Pond Company, New York, \$2818; 143, Prentiss Tool & Supply Company, New York, \$2818.

Class 102.—One back geared toolroom lathe—Bidder 63, Fairbanks Company, New York, \$1002; 128, Manning, Maxwell & Moore, New York, \$1165 and \$1045; 137, Niles-Bement-Pond Company, New York, \$1021.

Class 103.—One motor driven toolroom lathe—Bidder 63, Fairbanks Company, New York, \$1087; 128, Manning, Maxwell & Moore, New York, \$1395 and \$1240; 137, Niles-Bement-Pond Company, New York, \$1084.

Class 104.—One motor driven toolroom shaper—Bidder 63, Fairbanks Company, New York, \$910; 128, Manning, Maxwell & Moore, New York, \$1000; 137, Niles-Bement-Pond Company, New York, \$1021; 143, Prentiss Tool & Supply Company, New York, \$1275.

Class 105.—One motor driven radial drill—Bidder 128, Manning, Maxwell & Moore, New York, \$1075; 137, Niles-Bement-Pond Company, New York, \$899; 143, Prentiss Tool & Supply Company, New York, \$984.

Class 106.—One motor driven universal milling machine—Bidder 24, Brown & Sharpe Mfg. Company, Providence, R. I., \$1157.30; 63, Fairbanks Company, New York, \$1348; 128, Manning, Maxwell & Moore, New York, \$1285 and \$1135; 137, Niles-Bement-Pond Company, New York, \$1243.

Class 107.—One motor driven sensitive drill—Bidder 63, Fairbanks Company, New York, \$187; 137, Niles-Bement-Pond Company, New York, \$269 and \$259.

Class 108.—One motor driven two-wheel emery grinder—Bidder 63, Fairbanks Company, New York, \$203; 128, Manning, Maxwell & Moore, New York, \$367.

Class 109.—One motor driven portable cylinder boring machine—Bidder 63, Fairbanks Company, New York, \$668; 128, Manning, Maxwell & Moore, New York, \$615.

The following bids were opened September 20 at the office of the United States Marine Corps, Washington, D. C., for an electric power unit for the Philadelphia storehouse:

Item 1.—Unit for generator and switchboard, Ridgway Dynamo & Engine Company, Ridgway, Pa., \$3270; Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., \$4435; Runsey Electric Company, Philadelphia, Pa., \$3295; United Electric Construction Company, Philadelphia, Pa., \$3450; A. D. Granger Company, New York, \$3991; Fort Wayne Electric Works, Fort Wayne, Ind., \$3178; General Electric Company, Schenectady, N. Y., \$4001; Allis-Chalmers Company, Milwaukee, Wis., \$3605.

Item 2.—Unit price for engine and foundation—Trenton Engine Company, Trenton, N. J., \$1750; Ridgway Dynamo & Engine Company, Ridgway, Pa., \$2140; Ball Engine Company, Philadelphia, Pa., \$2593; United Electric Construction Company, Philadelphia, Pa., \$2850.50; A. D. Granger Company, New York, \$1797; Allis-Chalmers Company, Milwaukee, Wis., \$1932.

Under bids opened August 24, for machinery for the navy yards, the Gas Engine & Power Company, Morris Heights, New York, has been awarded class 111, one six-cylinder gasoline engine, \$6203; Hoisting Machinery Company, New York, class 91, two electric hoists, \$321.

Under bids opened July 13, for machinery for the navy yards, the Niles-Bement Pond Company, New York, has been awarded class 51, remodeling 110-ton electric traveling crane, \$20,675.

The following awards have been made for machinery for the navy yards, bids for which were opened September 7:

Hilles & Jones Company, Wilmington, Del., class 71, one double end combination punching and shearing machine, \$4418. C. H. Wheeler Mfg. Company, Philadelphia, Pa., class 81, one surface condenser, \$725.

Love Brothers, Inc., structural and ornamental iron work, the Aurora Foundry Company and the Fox River Iron Company, three affiliated interests having plants at Aurora, Ill., have established sales offices at 906 Fisher Building, Chicago, of which A. J. Love is manager.

HARDWARE

IMPROVEMENT in business methods is a practical problem before the merchants. The discussion of the subject in the gatherings of the Hardware associations gives to the meetings much of their real value. Every good Hardware store is stimulating and suggestive to those who are seeking information in regard to up-to-date and successful ways of conducting business. Even those who have made the most progress are still on the lookout for further improvement. There are, however, stores which are backward and behind the times. They are examples of what Hardware stores should not be. Their methods might be expressed in rules the very opposite of those which embody the best precepts of the trade. Notwithstanding all this, the encouraging fact is that an increasing proportion of the Hardware merchants have higher standards than heretofore and aim to avoid the defects in arrangement, and in management and business methods, which prevail in many establishments. Better still they recognize their own shortcomings and endeavor to correct them. The Hardware stores of to-day are greatly in advance of those of a few years ago, and they are constantly improving. **THE DEMAND FOR A BETTER ORDER OF THINGS IS IN THE AIR.**

With this improvement the trade press in large measure is to be credited. An illustration is found in the matter of Hardware store arrangement, a field which was opened up years ago by *The Iron Age*, whose descriptions of approved methods have been referred to as revolutionizing and transforming the Hardware stores of the country. This is, however, only one feature in the modern improved conduct of the business. Advertising methods, the effective use of the windows in displaying Hardware, business methods in the store, various means of securing customers and holding them, the whole art of selling goods, the management of clerks and many similar topics are of living interest to alert and up-to-date merchants. **THE DEMAND IS FOR DEFINITE PRACTICAL SUGGESTIONS, WHICH WILL AID THE MERCHANT IN MAKING A SUCCESS.**

That the merchants are interested in these practical matters is illustrated in the contents of the following pages. In them will be found communications from Hardware merchants on a variety of matters that have to do directly with the methods of the Hardware store and the problems which concern those in charge of them. Thus in one way or another the following practical questions are touched upon on the basis of advices received directly from the trade in regard to their methods of doing things:

How to Stimulate Fall Business.
Skillful and Up-to-date Advertising.
The Use of Floats in Old Home Week.
Prompt Deliveries Attract Business.
Cheerful Exchange of Goods.
Effective Show Window Display.
The Drift of Population to the Large Cities.
Estimating the Cost of Doing Business.
How to Avoid the Accumulation of Dead Stock.
Developing the Efficiency of Clerks.
Cultivating Business by Booklets, Circulars and Letters.

In the discussion of these and similar questions we

gratefully acknowledge the constant and valuable help given by our readers, as advices in regard to their methods have contributed greatly to the usefulness of *The Iron Age* and its acknowledged influence in the Hardware stores of the country. There is also an illustration of the attention constantly given in our columns to matters of the most practical character on the great variety of subjects concerned in the conduct of a successful Hardware business. The Hardware merchants certainly cannot complain of lack of information and suggestion, and **IF SPECIAL ADVICE IS REQUESTED THE IRON AGE IS PREPARED TO FURNISH IT.**

The topics treated in our columns, though many and various, cannot of course touch all the problems of the merchant. Business is so complicated and varied and conducted under so many different conditions that each merchant has his own problems to solve, his individual battle to fight. Some of these questions are large and complicated; some relate to comparatively little things, but things which, after all, it is important to settle right. We shall be glad to have any of these questions submitted to us. If we cannot answer them from our own information and experience we have within reach those who can. If the opinion of the trade is desired we are in touch with many of the best and brightest Hardware merchants in the land, who are ready to give their advice and co-operate in the effort to help and uplift their fellow merchants. **WE THEREFORE INVITE INQUIRIES ON ANY SUBJECT OF INTEREST TO THE HARDWARE STORE.**

Merchants and other business men in many lines have been more or less needlessly disturbed as the result of the publications in the daily press of a Washington dispatch stating that on and after January 1, 1910, when the recently revised penal code goes into effect, it will be unlawful for any one to write or circulate a check for less than \$1. It has been stated that the "most rational explanation of the enactment appears to be that it was designed to stimulate the sale of postage stamps and postal money orders."

As a matter of fact, the provision referred to is not a new law, but was passed 47 years ago, and has been in force and effect ever since, and was re-enacted in connection with the codification of the penal laws passed by Congress March 4, 1909, to take effect next January, and does not prohibit the making of checks for less than \$1.

In 1863, in order to raise funds for war purposes, this law was passed, placing postage stamps in general circulation as money. It was important that this device should not be interfered with by individuals issuing notes or checks to be used as fractional currency. A clause was, therefore, inserted in the law to prevent this. The Treasury Department has held that there is no conflict with this ancient law in issuing checks for any amount, however small, and in response to numerous inquiries upon the subject in the past few days Acting Secretary Norton reiterates this construction of the law, stating among other things that "a bank check is an order on a banker to pay a particular sum of money, and it is not designed to be put in circulation as a substitute for money," and that this has been the construction placed upon the law by the Treasury Department from the passage of the act in 1862 down to the present time.

Condition of Trade.

In volume of current business, tone of the market and outlook for the next few months, the situation is substantially the same as at our last review. The satisfactory conditions then referred to continue, accentuated perhaps by the advance of the season and the further hardening of the Iron market. The volume of business reported by manufacturers is fair, but in most cases not especially heavy. The moderation in purchasing is owing apparently to the liberal buying indulged in earlier in the season, which in several branches of the trade has kept the manufacturers busy up to this time. In the field of Heavy Hardware there still is an upward tendency and orders have recently been freely placed to such an extent that some of the manufacturers are obliged to work overtime in order to make anything like prompt deliveries. In most lines of General and Shelf goods the demand is less affected by anticipations of advances. There is, however, a stronger tone in many branches of the trade, and especially in goods in which competition has forced the price down to an unpleasantly close figure. The effect of the coming of colder weather is felt by manufacturers of seasonable goods and by the merchants through whom they are distributed. There is accordingly an active movement in many fall and winter goods. September has made a fair record, but October promises to be a busier month with the wholesale and retail merchants, as trade is already feeling the quickening effects of cool weather. Jobbers report a good many rush orders from merchants who were slow in buying, failing to recognize the advantage there is in having seasonable goods in stock and on display in good time. Preparations too for holiday business are receiving attention from merchants who have not already covered their requirements in this increasing and profitable line. The indications are that more attention will be given to this department than any previous year as the trade are coming to recognize more fully the opportunities which are given them in this field.

Chicago.

Reports of trade conditions in all branches of the Hardware market are in the main cheering in tone, indicating the movement of a fair volume of business and a hopeful view as to its future development. It should be observed, however, that a large part of the heavy shipments of some of the heavier staples now going forward are in execution of phenomenally large contracts taken some time ago. There is no doubt but that consumption in general is steadily increasing, yet it is questionable if it is growing at a rate equal to present production in some lines. The Iron and Steel mills are crowded with specifications on which deliveries are badly retarded, but new buying is not exceptionally large, and it is hoped that a sane view of the situation will operate to prevent over enthusiastic haste in pressing toward a too rapid inflation of values. Leading distributors are of the opinion that while stocks of retail dealers are as a rule adequate for current demands, they are not over full in any section of the country. There is, in fact, nothing in existing market conditions according to the judgment of experienced observers to induce speculative buying, and in the absence of this influence, trade can be depended upon to follow a conservative course that will lead to gradual and safe expansion. Moderate advances may be expected on some goods more directly affected by the rising values of raw material from which they are made, but the tendency in this direction is principally confined to articles manufactured in whole or in part from Iron and Steel. Even here the effect upon the more highly finished lines is noticeable rather in a firmer maintenance of existing schedules than in radical price advances. Continuance

of activity in building construction, not only in this city but throughout the West, is reflected in a well-sustained demand for builders' tools and equipment. The wider use of concrete for all sorts of structures has led to the development of an extended line of tools adapted to such work; These now occupy a prominent place in Hardware stocks, dealers everywhere being called upon to supply them. Forward orders for lawn mowers are being booked, and a fairly heavy trade for spring shipment is anticipated. The near approach of the sporting season has given fresh impetus to the movement of guns and ammunition, in consequence of which sporting goods departments are enjoying a period of seasonable activity. As a summary of market conditions as they now appear, it may be said that the course ahead seems free from obstacles that would seriously impede continued progress.

NOTES ON PRICES

Wire Nails.—The orders booked by the mills at the low prices are being pretty well executed. There is a good deal of new business also being received principally from merchants who did not place their orders before the advances took place. The character of current business indicates the confidence of the trade in the stability of present prices, but there is very little speculative buying. There is also a feeling that the volume of business during the fall and early winter will be good as an active trade is generally anticipated. The jobbers very generally bought liberally at the low prices which ruled a few months ago and some of them are showing a disposition to market their stocks at prices which would not be justified on the basis of existing quotations. This is the only irregularity in the market and it does not cause much disturbance, as the manufacturers' prices are decidedly firm—indeed seldom have they been maintained with the regularity which characterizes the market at this time. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....	\$1.80
Carload lots to retail merchants.....	1.85
Less than carloads to jobbers.....	1.85
Less than carloads to retail merchants.....	1.95

New York.—Local business has been interfered with considerably during the past week by the Hudson-Fulton celebration, which attracts a great crowd to the city and interrupts to a considerable extent the regular course of business. Therefore while the outlook is regarded as promising for the next few months the volume of business at present is moderate. There is no change in prices for small lots from store, which are generally held at \$2 per keg.

Chicago.—New demand is developing slowly, being mainly confined to the smaller buyers. As soon as all existing contracts placed some time ago at \$1.70 a keg are out of the way, a livelier movement in new buying is expected. At the rate shipments of specifications against contracts are going forward from the mills, all of the old business will be cleaned up before long. Conditions throughout the West are in general highly favorable to a heavy demand this fall, which, it is believed, will make itself felt when the crops have been taken care of. The market is reported firm at the following quotations: \$1.98, Chicago, in carloads to jobbers, and \$2.03 in carloads to retailers, with an advance of 10 cents for less than carloads from mills.

Pittsburgh.—New business in Wire Nails continues light, large buyers being still fully covered by contracts. Specifications are good, all the business taken at \$1.60 having been cleaned up, and most of the mills are drawing near to the end of the business booked at \$1.70. As a rule the mills will cancel any unspecified tonnage on the \$1.70 contract October 1, leaving nothing on their books but \$1.80 orders. The market is very firm and we quote Wire Nails at \$1.80, base, f.o.b. Pittsburgh, in carload and larger lots.

Cut Nails.—The past week has been uneventful in the Cut Nail market with the development probably of a little greater strength in prices in sympathy with the

strong tone which prevails in the Iron market. There is, therefore, a tendency on the part of the mills to withdraw exceptionally low quotations or special concessions. The market is represented by the quotation of from \$1.75 to \$1.80, f.o.b. mill, and is characterized by a steady tone.

New York.—There is about a normal business locally, except as it is interfered with by the celebration. With no important change in the mill prices, small lots from store are held as of late at \$2 per keg. The indications for fall business are regarded as promising, as there is a good deal of building in sight.

Chicago.—The demand for Cut Nails is better distributed, and orders though moderate in size are more plentiful. Jobbers are specifying more liberally, especially for Iron Shingle Nails. Greater firmness in prices has resulted from the higher costs of Iron and Steel, and the following quotations now represent the minimum of the market. In car lots to jobbers, Steel Cut Nails, \$1.93; Iron Cut Nails, \$2.03.

Pittsburgh.—New demand is fairly good, and mills are running quite full, specifications on old contracts being good. We quote Cut Nails at a minimum of \$1.75, at mill, but would note that some mills are quoting \$1.80, at mill.

Barb Wire.—The volume of business is fair but not especially heavy, principally in view of liberal purchases early in the season. The demand from the farmers not being urgent at this time there is a disposition on the part of the retail merchants to defer ordering, not, however, on account of any suspicion of prices, which are steadily maintained. Quotations are as follows, f.o.b. Pittsburgh:

	Painted.	Gal.
Jobbers, carload lots.....	\$1.80	\$2.10
Retailers, carload lots.....	1.85	2.15
Retailers, less than carload lots.....	1.95	2.25

Chicago.—While new demand is not developing as rapidly as was expected, there is nothing in the outlook that might be construed as unfavorable to a better movement a little later. The mills have not yet completed shipments of existing contracts, though the volume of these now on the books is rapidly diminishing. A gradual increase in new buying is expected from now on and a satisfactory fall trade is looked for. The ruling schedule of prices as represented by the following quotations is reported to be firmly maintained. To jobbers, Chicago, carloads, Painted, \$1.98; Galvanized, \$2.28. To retailers, carloads, Painted, \$2.08; Galvanized, \$2.38; retailers, less than carloads, Painted, \$2.13; Galvanized, \$2.43. Staples, Bright, in carloads, \$1.98; Galvanized, \$2.28; carloads, to retailers, 10 cents extra, with an additional 10 cents for less than carloads.

Pittsburgh.—New business is not very heavy, but is expected to improve. Practically all of the cheap business taken last May has been shipped, and there is not much left of the business taken after the first advance. We quote the market firm at \$2.10 for Galvanized Barb Wire and \$1.80 for Painted, in carload and larger lots, f.o.b. Pittsburgh, subject to usual terms.

Fence Wire.—The prospect of a large business in Woven Fencing during the season is making manufacturers urgent in asking for prompt shipments of Wire on orders placed some time ago. There is also a fair volume of new business, principally from parties who did not place orders at the low prices recently ruling. The market is very even in the matter of price, quotations to jobbers in carload lots being as follows, on a basis of \$1.60 for Plain and \$1.90 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.....	0 to 9	10	11	12&12½	13	14	15	16
Annealed.....	\$1.60	1.65	1.70	1.75	1.85	1.95	2.05	2.15
Galvanized.....	1.90	1.95	2.00	2.05	2.15	2.25	2.35	2.75

Chicago.—With the prospect of a busy season ahead, Fence manufacturers are insisting upon prompt shipment of their specifications, with which the mills are liberally supplied. New buying is light, though it is expected that it will become heavier as the season advances. Prices

are well maintained, and we quote as follows: Carloads, to jobbers, \$1.78, base, f.o.b. Chicago.

Pittsburgh.—Specifications on old contracts are good. Practically all of the business now on books is composed of contracts taken after the first advance, or sales made after the second advance, when prices were advanced to the present level. We quote the market firm at \$1.90 for Galvanized and \$1.60 for Plain, in carload and larger lots, f.o.b. Pittsburgh, subject to 2 per cent. discount for cash in 10 days.

Belting.—In consequence of the advancing market for Cotton, Fabric Belting is manifesting a tendency toward higher levels, some manufacturers having already advanced their prices.

Crow Bars.—There has been some irregularity in the market on Crow Bars, but the hardening tendencies in metal products have caused the withdrawal of low prices, so that the market is now in better shape.

Sledges and Hammers.—The manufacturers of Sledges and Hammers recently advanced the rates for these goods, to become effective October 1, the market being represented by a discount of 80 and 10 and 10 per cent. for Heavy Sledges and 80 and 10 per cent. for Light Sledges, with usual concessions to the large trade.

Rivets.—The reports from the market indicate that the new and advanced prices on Structural and Cone Head Boiler Rivets are well maintained, the market being in good condition. The manufacturers refer to the fact that the demand for these goods is unusually heavy at present, and that raw materials have advanced very sharply in the last month or six weeks, making an advance in prices on Rivets absolutely necessary. It is stated that all the manufacturers of Rivets have large orders on their books and are running their works full capacity. Iron and miscellaneous Rivets were advanced last week in harmony with increases in the price of other Rivets, so that the market is represented by a discount of 80 per cent. from list, with concessions to large buyers capable of specifying for carloads.

Crayons and Pencils.—Stanley Doggett, 101 Beekman street, New York, producing Metal workers' Talc or Soapstone Crayons and Pencils, is issuing a price card of the line in Nos. 1 to 7, inclusive, listed at \$1.50 to \$2.10 per gross, with a series of graded discounts varying with the quantity ordered. The discounts cover one, two, three and five case lots and over, 12 gro. to the case. A single case of 12 gro. is quoted at discount 20 per cent.

Dripping Pans.—Dripping Pans in sympathy with advancing prices in Sheet Metal from which they are made, are stronger, the price in fair quantities being represented by a discount of 75 and 10 and 5½ per cent. from the accompanying list, viz:

Inch	Doz.	Inch	Doz.	Inch	Doz.	Inch	Doz.
6x9.....	\$1.75	8x12.....	\$2.55	10x12.....	\$3.05	12x14.....	\$4.00
6½x7½.....	1.70	8x15.....	3.05	10x14.....	3.40	12x17.....	4.45
6½x9.....	1.90	8x17.....	3.45	10x15.....	3.50	12x19.....	4.85
6½x13.....	2.45	8½x15.....	3.10	10x16.....	3.75	13x13.....	4.00
7x8.....	1.80	9x12.....	2.60	10x17.....	4.00	14x14.....	4.50
7x9.....	2.00	9x14.....	3.00	10x19.....	4.25	14x15.....	4.75
7x10.....	2.10	9x15.....	3.45	10x20.....	4.45	14x17.....	5.00
7x14.....	2.65	9x17.....	3.75	11x11.....	3.00	14½x20.....	6.00
7½x9.....	2.05	9½x16½.....	3.90	11x15.....	3.90	16x17.....	5.50
8x10.....	2.20	10x10.....	2.75	11x16.....	4.15	16x20.....	6.25
				12x12.....	3.50	18x19.....	6.50

Stove and Tire Bolts.—The contemplated advance in Stove and Tire Bolts, to which reference was made in the issue of September 23, was not made by the manufacturers last week.

Mops, Twine, Clothes Lines, &c.—Prices on Mops, Twine, Clothes Lines and analogous goods are up for the ordinary grades an average of about ½ to 1 cent per pound. There is apparent a general stiffening of prices all along the line in goods made from raw cotton.

Cotton Duck.—Owing to increases in the price of raw cotton the prices for Cotton Duck have been advanced nearly 20 per cent., the manufacturers' price in fair quantities being 30 per cent. discount from list instead of 40 per cent. The retail trade, however, may be able to buy close for some time because of stock on hand and contracts in force with large dealers. The discounts

apply to Duck 22 and 24 in. wide, the grades of 26 in. and wider being quoted at 35 per cent. discount.

Cotton Rope.—Owing to higher prices in the cotton market advances were made in Cotton Rope last week aggregating about 1 cent per pound.

Linseed Oil.—The market has a firm tone at prices which have undergone no change since our last issue. The fall consuming season is now on and a larger demand is noted. Prices continue on a basis of 56 cents for Western Raw in 5 bbl. lots and over, Boiled Oil being 1 cent advance per gallon on Raw.

Spirits Turpentine.—Under pressure of a higher Savannah market quotations have advanced during the week. The demand has been of a moderate character, purchases for the most part being for early needs. The New York market is represented by the following quotations: Oil Barrels, 60½ to 61 cents; Machine Made Barrels, 61 to 61½ cents.

Window Glass.—A largely attended meeting of the manufacturers was held at Pittsburgh on the 23d inst., a number of prominent jobbers also participating in the deliberations. A good deal of time was spent in considering measures for improving trade conditions, and it was finally determined to go back to the Imperial Window Glass Company plan, and another effort will be made to perfect this organization. The manufacturers will come together again on October 14, for further consideration of the project. It is reported that the American Window Glass Company has signed a wage scale with the Window Glass Cutters' and Flatteners' Protective Association. By this scale the company agrees to pay an 8 per cent. advance in wages, making them the same as those paid in the hand blowing factories. These wages are the same as offered by the company to the old Cutters' and Flatteners' association several weeks since, and which they refused to accept, demanding a 12½ per cent. advance. The new association was formed by members of the old, and under this settlement practically all of the old men will return to work, ending the strike which has lasted for three weeks. A good demand for glass is reported. Prices recommended by the Eastern Window Glass Jobbers' Association, from jobbers' list, October 1, 1903, for territory east of the Allegheny Mountains, are as follows: New England States, from jobbers, Single, 90 and 30 per cent., and Double, 90 and 35 per cent.; New York State, Single, 90 and 30 per cent., and Double, 90 and 35 per cent.; New York State, factory shipments, Single, 90 and 40 per cent.; Double, 90 and 45 per cent.; in the Southern States discounts vary from 90 and 20 to 90 and 30 per cent. on Single and from 90 and 25 to 90 and 40 per cent. on Double.

The Paxton & Gallagher Company's Trademark.

THE Paxton & Gallagher Company, wholesale Hardware, Omaha, Neb., has lately adopted the trademark which is reproduced herewith. Instead of taking up some word signifying quality or emphasizing some specific feature of goods, a title has been selected which, it will be observed, embodies letters suggesting the name of the house and the city in which it is located.



The reproduction hardly does justice to the trademark, which is printed in several colors. The lettering appears in white on a blue background, the stripes are in red and white and the borders are in black.

This trademark will be employed exclusively in connection with goods of the highest quality behind which the house is prepared to stand. At the present time it is being used on a complete line of full polished tools, including Axes, Saws, Hammers, Hatchets, Chisels, &c., also on a line of Cutlery, covering Pocket Knives, Razors, Shears, Butcher and Paring Knives. It is intended later

to brand certain Bicycles, Sewing Machines and other lines in a similar way.

What Hardwaremen Are Doing This Fall to Stimulate Business.

With the coming of September Hardware merchants generally are taking hold of things with renewed enterprise and energy and are adopting more aggressive measures for the prosecution of business during the fall and winter months. In the extracts given below from letters lately received from merchants in various States, reference is made to what they are doing in this direction.

Monthly Circular and Biscuit Baking Contest.

FROM NEBRASKA: This month, as well as during October and November, we are issuing a circular in which different seasonable goods will be featured. We are also conducting a biscuit baking contest for little girls for the purpose of boosting our Stove department.

We are much pleased with the monthly circular idea, and the one we use is quite inexpensive. It creates more interest than newspaper advertising.

Personal Letters and Window Display.

FROM NEW YORK: My method of attracting the attention of customers to any special line of goods may seem rather tame to a great many merchants. But inasmuch as it has proved successful in my case I have no thought of adopting anything new.

At this time of the year I go through the city directory, selecting the names and addresses of people that I think are interested in a certain line. I write them a personal letter. These letters are turned out on the typewriter, three at a time, using carbon. They are perfectly clear and distinct and have none of the marks or characteristics of an ordinary circular letter.

I also take special pains at this time of the year to trim my windows with goods that are seasonable.

County Fair Exhibits, Special Sales, Personal Letters, Newspaper Advertising.

FROM VERMONT: We make use of the following special methods for stimulating early fall business:

Exhibit at county fairs of implements, vehicles, harness, blankets, roofing and paints, with attractive souvenirs to bring people to our display.

"Red Tag Sales" of vehicles and harness at a sharp cut from regular prices. These sales are limited to two weeks.

Personal letters to farmers calling attention to seasonable goods.

Constant newspaper advertising.

Keeps Right On.

FROM MINNESOTA: I keep right on advertising my business in different ways, by local newspapers, printed matter of different kinds, novelties, &c.—anything that will keep my name and business before the public.

I keep my stock well assorted, store clean and attractive, and give my customers good value for their money.

I try to be reasonable in my prices and attend to the wants of customers promptly and pleasantly.

I find that you have to keep after business every day in the year to make good.

Window Display and Local Paper Advertising.

FROM CONNECTICUT: We rely upon a good window display and local newspaper advertising, changing both every week.

Hardware Organizations.

Kentucky Retail Hardware Association.

THE 1910 convention of the Kentucky Retail Hardware and Stove Dealers' Association, J. M. Stone, secretary, Sturgis, will be held at the Galt House, February 1, 2 and 3. Arrangements have been made for exhibit space in the hotel, this space being rented to manufacturers and jobbers who desire to make displays of their goods under the supervision of the association. The next convention marks the tenth anniversary of the association, and a new feature will be introduced in admitting ladies who accompany the members to all open meetings and to the banquet.

The membership of the Kentucky Association since the last meeting shows an increase of about 20 per cent. Nearly 50 per cent. of the members are availing themselves of the opportunity to carry Hardware mutual insurance. The nonaffiliated merchants of the State, we are advised, are showing a better disposition toward the association than ever before, and it is expected that a quite considerable addition will be made to the membership roll before the next meeting.

Pennsylvania Retail Hardware Association.

The ninth annual convention and Hardware exposition of the Pennsylvania Retail Hardware Association, which not only includes merchants in that State, but also a considerable number of retailers in New Jersey, Delaware and Maryland, will be held at the Second Regiment Armory, Philadelphia, Pa., on February 8, 9, 10 and 11 next.

Owing to the fact that the applications for exhibition space in the armory already call for 115 booths, W. P. Lewis, Huntingdon, Pa., secretary-treasurer of the association, has felt it desirable to take up at once the allotment of spaces. This is being done by submitting diagrams to the exhibitors in the order in which they contracted for space at last year's convention. It is expected, however, in a short time to submit diagrams of the floor space in the exhibition hall broadly to every applicant whether old or new, and to let the spaces on the theory of first come first served.

In connection with the diagram a booklet is being issued in which attention is forcibly called to the convention and the Hardware exhibit and the opportunity presented by the latter for business between the manufacturers and merchants who attend the convention.

Nearly 600 Members Added in 17 Months.

Since April 30th last up to the present time, a period of approximately 17 months, the accessions to the association membership number 564, which is flattering evidence of the energy and enterprise with which the association work has been conducted. The officials are confident that the total membership at the time of the next convention will be not far from 1,000.

Iowa Retail Hardware Association.

The Board of Directors of the Iowa Retail Hardware Association met on the 15th inst. at the Hotel Chamberlain in Des Moines for the purpose of discussing the date and location of the twelfth annual convention and determining on the general programme. The following members of the board were present: L. C. Abbott, Marshalltown, president; E. C. Barbour, Fort Madison; C. E. Haas, Le Mars; Aug. F. Mueller, Webster City; Wm. McQuesten, Muscatine; Thos. Larson, Eldora; Geo. A. Bieber, Fort Atkinson; H. M. Duncan, Albia; C. T. Gadd, Des Moines; W. M. Kenting, Afton; Th. N. Petersen, Council Bluffs, and A. R. Sale, Mason City, secretary.

Des Moines Selected.

After considering the various propositions submitted by a number of cities, the board by a unanimous vote

selected Des Moines, and the dates of the meeting were set for March 1, 2, 3 and 4 next. The convention will be held in the Des Moines Coliseum, a splendid building now in the course of construction, which will afford ample space for the business sessions, as well as for the Hardware exhibition, which will be held in conjunction with the meeting. The Coliseum will be a fireproof structure located on the river front, and convenient to the hotel district of the city.

Many inquiries are already on file for exhibit space, and, owing to the favorable location of Des Moines, it is expected that there will be an unusually large attendance at the convention.

Campaign for New Members.

At the present time the membership of the association exceeds 800, 178 new members having been added during the past year. The Board decided upon a campaign for new members, which will include a personal effort on the part of each director as well as enlisting the interest of the Hardware traveling salesmen, to whom prizes will be awarded for those securing the largest lists of new members. Committees were also appointed on programme, exhibits, official gazette, question box and a revision of the by-laws.

The New Insurance Building.

At the close of the session S. R. Miles, Mason City, president of the Iowa Hardware Mutual Insurance Association, submitted to the board for their inspection the plans and details of the building now under process of construction at Mason City, which is to be the new home of the insurance association. The building will be a two-story brick structure, 24x122 ft., the offices of the association being located on the first floor and provided with ample vault facilities for the steadily increasing business of the insurance body. It is the expectation of the building committee having charge of the work to have the building entirely ready for occupancy by May first next.

New York State Association of Hardware Jobbers.

The New York State Association of Hardware Jobbers held a meeting at Wilkes-Barre, Pa., on the 23d inst., the deliberations being held at the Westmoreland Club, where the members were guests of Phelps, Lewis & Bennett Company. The following officers were elected for the ensuing year: President, R. H. Treman, Ithaca, N. Y.; vice-president, H. S. Darby, Troy, N. Y.; secretary-treasurer, I. D. Booth, Jr., Elmira, N. Y. Directors: F. A. Phelps, Wilkes-Barre, Pa.; W. W. Conde, Watertown, N. Y.

At the present time the association comprises the following houses:

J. M. Warren & Co., Troy, N. Y.	Mathews & Boucher, Rochester, N. Y.
Albany Hardware & Iron Co., Albany, N. Y.	Weaver, Palmer & Richmond, Rochester, N. Y.
Wright-Dana Hardware Co., Utica, N. Y.	Buffalo Wholesale Hardware Co., Buffalo, N. Y.
Burbans & Black Co., Syracuse, N. Y.	J. T. Johnson, Kingston, N. Y.
Babcock, Hinds & Underwood, Binghamton, N. Y.	W. W. Conde Hardware Co., Watertown, N. Y.
Barker, Rose & Clinton Co., Elmira, N. Y.	Treman, King & Co., Ithaca, N. Y.
Irving D. Booth, Elmira, N. Y.	Phelps, Lewis & Bennett Co., Wilkes-Barre, Pa.

THE NASH HARDWARE COMPANY, Fort Worth, Texas, wholesaling Hardware, recently lost one of its warehouses, No. 3, by fire, causing a loss of \$45,000. The company was fully insured and was inconvenienced for a short time only.

THE name of the Paddock Hardware Company, which formerly conducted a Hardware and Housefurnishing Goods business at 427 East Forty-seventh street, Chicago, has been changed to the Hardware & Supply Company, and the business has been moved to a new store at Forty-seventh street and Langley avenue. The quarters now occupied by the concern are nearly four times as large as the old store.

that reputation with people who want only cheap goods? We know our prices are low whenever goods of equal quality are compared—but that's something you would better find out for yourself.

Won't you come and see us?

Very truly yours,

THE JOHN E. BASSETT & CO.

A Reminder on Golf Clubs.

Another circular form intended for the sterner sex and making special claims in a breezy fashion for the line of Golf Clubs handled was to the following effect:

Dear Sir:

Down at the end of our store is a showcase—you may remember it, we kept Hammers there. Now we've moved the Hammers because we've found a more interesting lot of stuff for the case.

One day a man remarked that no one in town kept a good line of Golf Clubs. The gray matter began to work and we made inquiries. We found the man was wrong—the best Golf Clubs in the country were made right in New Haven, but you had to hike way out to Mill Rock to buy them.

You did, but you don't now.

We've filled that case full of some of the finest Clubs you ever toted over the links. They're made by ROBERT PRYDE, of course, and most golfers hereabouts swear by Pryde's Clubs. If you ever

spondence relative to this department of the business. The Golf Club circular was printed on a letterhead used exclusively for the Sporting Goods department. In these letterheads the department covered is brought out conspicuously, pertinent illustrations being used. In one the business is described as "Hardware and Cutlery, Kitchen Utensils and Household Goods, Garden Supplies." In the other the description is "Hardware and Cutlery, Golf, Tennis and Baseball Goods, Fishing Tackle." This perhaps involves a little extra care and expense, but it is doubtless an effective method of advertising the different departments of stock.

Window Display of Fine Tools.

Airship Feature Catches the Eye and Makes a Hit.

THE merchants of "Suffering Kansas" having survived the plagues of grasshoppers and other trying experiences are now free to contemplate flights of airships. The dirigible illustrated was displayed in the establishment of the Ruhling Hardware Company, Salina, Kan., and was arranged by one of its clerks, L. L. Young. The window is 6 x 8 ft. in size. The airship was suspended from the ceiling by invisible Wires wrapped around the body of the Measures and Pails forming the gas container. This consisted of two 1-bushel Measures, two ½-bushel Measures, two 10-qt. Tin Pails and two 12-qt. Galvanized Pails.

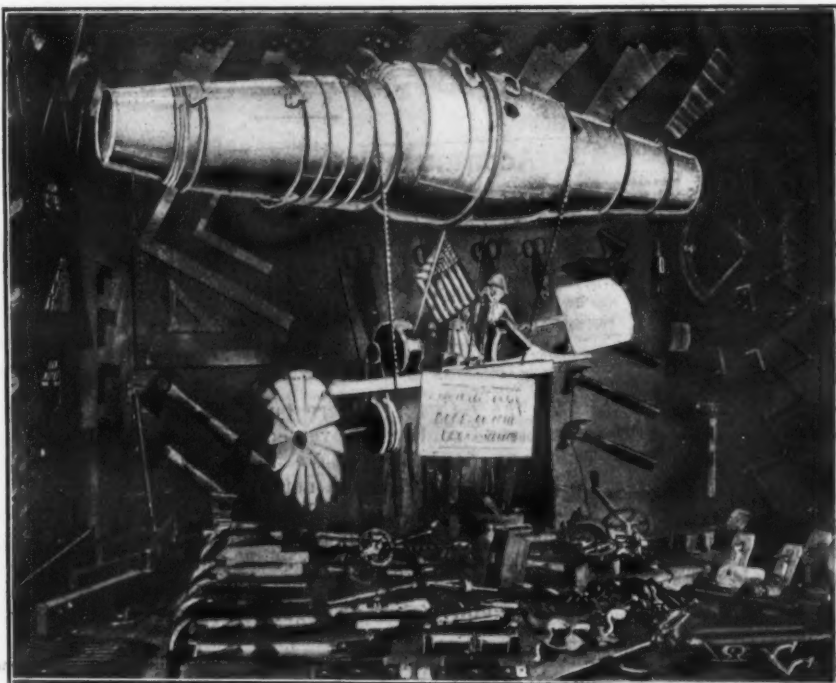
The car was formed by drawing and fastening at each end two Yard Sticks, between which a common Saw Cutter was placed. The propeller was a Tin Pot Cover, cut to produce the necessary effect. The propeller shaft was a ¾ x 10 in. Machine Bolt, upon which was fastened a Wooden Hay Carrier Pulley. The propeller was revolved by a 1-36 hp. motor attached to the electric window lights. The rudder was a piece of tin, cut to shape and supported by a Jointer Plane. A flag and

two small figures were placed in the car. A placard in the window read:

**Not the Wright airship,
but the RIGHT airship.**

The main thing about the window, however, was the artistically arranged display of tools, which covered the floor and background, and from which the airship did not entirely divert the attention of individuals.

A FIRE recently entirely destroyed the two upper floors of the establishment of the Nixon-Smith Hardware Company, Rome, Ga., successor to the Terhune-Nixon Company, but damaged the lower floor by water only. The loss was fully covered by insurance, and business will be resumed at once. The company deals in Hardware, Mantels, Grates, Tile, Agricultural Implements, Buggies and Harness.



(W) Right Airship of the Ruhling Hardware Company, Which Attracted Attention to a Fine Display of Tools.

saw him make one you'd know why. He balances and swings and otherwise tests every Club as though his reputation depended on that particular Club—and so it does. That's what has made his reputation.

We sell these at the same prices Mr. Pryde charges for them and we can have him build special Clubs to suit your physical or mental make-up if our stock patterns don't.

We also carry most of the popular Golf Balls and a good line of Caddy Bags, both in canvas and leather.

Yours for sport,

THE JOHN E. BASSETT & CO.

The above letters were sent out to a picked mailing list and were enclosed in envelopes which matched the paper used, both in color and quality.

Letterheads for Different Departments.

Another feature of Mr. Bassett's store advertising is the fact that he employs a number of different letterheads. The "Kitchen Annex" letter reproduced above was sent out on stationery which is used only for corre-

HARDWARE MERCHANTS ON UP-TO-DATE TOPICS.

The Drift to the Cities.

A Merchant's Letter on the Reasons Why.

The Changed Condition of Country Trade.

AS has been noted in these columns there is in some sections of the country a noticeable drift of population and business to the cities and the larger towns. The following letter from a representative Hardware merchant in the Central West comments on this evolution and advances the reasons, which in the judgment of the writer, are responsible:

That there is a drift of population and trade toward the cities and larger towns is very perceivable. As large a place as our city, with approximately 25,000 inhabitants, is two larger cities not 75 miles away, are drawing trade away from us, and in turn our city is drawing from the small towns within 25 miles.

We could name quite a number of small towns ranging in population from 200 to 1200, that are on the standstill, or going backwards. The merchants in these towns are complaining that their business is growing smaller, that the tendency of their customers to buy in larger towns and to order by mail from catalogue houses, &c., is increasing.

Cheap Travel and Rural Free Delivery.

The inclination of the young man these days to want to live in a larger city has something to do with this. The two principal reasons, however, are found in the cheap travel afforded by traction lines and the rural free delivery of mail. The small towns that have suffered the most are those on the traction lines and within 35 miles of the larger city. The cars come and go every hour, making it convenient for shoppers, and fares are about 1½ cents per mile. The traction cars, too, are more accommodating to the public in handling baggage. A country woman can get on the traction and occupy two seats and part of the platform with her baggage without any objection from the conductor.

These small towns formerly had post offices, which brought many farmers for their mail, but now only those living within city limits get their mail at the office, and all roads going out of the towns are rural routes, thus cutting out the necessity of some one from every home going to the post office daily. This convenience furnishes business for the catalogue houses. The farmer sits down, opens up the catalogue, and encloses his order in a 2-cent envelope, puts it into the box on the gate post, and the goods come to him by mail or by freight to the nearest station.

In the Event of Parcel Post.

This is how it is now, but with parcel post throughout the country, one will almost have to make a trip to the farm to see a farm wagon. The racks about the town squares and side streets for the farmer to hitch to while shopping will be a thing of the past. They will not be needed, and with postal savings banks, he will not need to come to town for anything, except to pay taxes, and possibly to sell his products, and right here is where the farmer is going to lose out in the long run. He is going to remove the market for his farm products so far away that he will lose considerable of his profit in the cost of transportation to the markets.

If this thing continues everybody soon will have moved to Chicago or to some other large city, and the farmer will find himself a backwoodsman, so far from civilization that he will want to move to Chicago himself.

While there are other and weighty objections to the carriage of merchandise by mail (under the comparatively inoffensive name of "parcel post"), there is no doubt that its injurious effect on the business of the towns and villages, first and ultimately on the farmers surrounding them, is a sufficient reason why legislators should go very slow in yielding to the shortsighted views of its advocates.

Getting Good Service from Clerks.

How to Stimulate Them to Greater and More Intelligent Effort.

The Responsibility of the Proprietor for Mistakes.

To the Editor: To secure the best service from clerks, familiarity is not necessary. Rather impress them with the idea that anything done for the interest of the establishment is for their interest. To be in touch with the clerks and compliment them when they merit it, incites them to greater effort. Reproof if necessary, is better administered at some other time and in private, rather than at the time the error is made and before a store full of people.

The average clerk feels badly enough over a mistake he has made, to try not to make it again, if he is treated nicely about it. Some proprietors mentally take a large portion of the blame upon themselves when an error occurs, and straightway adopt measures which will make the same kind of a mistake impossible in the future. Under such supervision a mistake is not an unmixed evil, as it improves the service of the establishment.

NEW JERSEY.

Accumulation of Dead Stock.

Samples and Stock Should Be Kept in Close Proximity.

Limited Quantity and Excellent Assortment Turns Capital Quickly.

To the Editor: Modern business conditions demand a strict and continuous oversight to prevent an accumulation of dead stock. We have all stock in close proximity to samples, and not scattered in different portions of the store. This plan permits of a close supervision of each line and style, quickly indicating when stock becomes low enough to re-order, shows which goods are the best or poorest sellers, and permits carrying a limited quantity but an excellent assortment of each line.

A restricted quantity may appear disadvantageous, but it insures the turning over of capital frequently during the year on active lines, and if care is exercised, prevents unsalable goods remaining long in stock. Merchants located further from the source of supply may not be able to sail so close hauled to the wind, but the principle is a safe one to follow.

NEW YORK.

Changes in Marketing Methods.

Passing Up the Jobber and Dealing with the Retailer.

Establishing Branch Stores for Sales to the Consumer.

To the Editor: The predilection of some jobbing houses to cut prices and fritter away opportunities to make money is constantly alluded to by manufacturers, who also complain that on staple lines long established and well-known products are often abandoned for inferior goods in consideration of a slightly reduced price. Doubtless this is a subject on which much can be said on both sides, but regardless of the contentions of either group of disputants it is becoming more common for producers to seek an outlet direct to the distributor or re-

tailor or in many instances to the individuals who use the goods.

Direct Relations with Retailer and Consumer.

Some of this has long been true in lines that readily lend themselves to the establishment of branch retail stores in various cities direct by the maker, as, for example, Boots and Shoes, Sewing Machines, Safety Razors, Cash Registers, Sporting Goods, &c., while in some Hardware Specialties fine Mechanics' Tools and allied goods, the retailer is sought direct, largely to the exclusion of the jobber.

An instance, in an entirely different field of industry but in classes of goods handled by houses dealing in factory, mill, steamship and railroad supplies came to notice recently when the leading company in the line in mind observed that the jobber could continue his course, but there would be a large increase in the company's business in 1909 over 1907, its banner year, and principally on account of pushing its many trademarked specialties. In the staples there had been no disposition to meet unreasonable and profitless competition, but where necessary to get business even in these lines it proposed to have a share.

The success of this method of doing business is attributed largely to systematic organization, and the training of the selling force, coupled with other modern ways of improving quality and reducing manufacturing costs.

OBSERVER.

Prompt Delivery and Goods Returned.

Opportunities Afforded for Making Friends for the Store.

To the Editor: Prompt delivery of goods promised at a certain time is a point that cannot be too closely enforced. If an article is promised in half an hour and delivered in 15 minutes **a casual customer may be made a permanent one, or an old one a walking advertisement for the store.**

In some stores salesmen are not allowed to enter into a discussion about articles that are returned as unsatisfactory, but the matter is referred to the proprietor who instructs the salesman to replace the article at fault with a new one. The customer is immediately impressed with the idea that **it is a safe place to trade and that the merchant has his best interests at heart.**

To make the exchange in a courteous manner often requires almost superhuman control on the part of the merchant, especially when he sees that the customer and not the article is at fault. Fortunately such cases are likely to be the exception rather than the rule, so that the loss is not large, and the merchant's good humor is not frequently put to the test on this score.

INDIANA.

A LARGE PORTION of the product of the W. A. Ives Mfg. Company, Wallingford, Conn., and 299 Broadway, New York, is distributed by the Smith & Hemenway Company, 108 Duane street, New York, which also represents several other manufacturers. The salesmen of the latter company were called in last month and a special room fitted up for them. The first night a banquet was given by the Smith & Hemenway Company at Coney Island. The next day there was a general conference with the heads of the various departments and factories. The following day they were entertained by the W. A. Ives Company at Wallingford, and given a banquet at a resort on Long Island Sound. Thursday the gentlemen were entertained at Irvington, N. J., where the Pilers are made, and on Friday the party visited the factory at which the Shrp Shavr Safety Razor is made, and was afterward entertained by Mr. Randall, president of that company. C. J. Benham, president of the W. A. Ives Mfg. Company, was present at all the sessions of the week, and he believes that the meetings and exchange of views will be beneficial and advantageous to all concerned.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers catalogues, price-lists, quotations, &c.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM CHARLES BROWN, Meriden, Kan., who has bought the business formerly carried on by the Warner Hardware Company, retailing Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Window Glass, Paints and Oils, Furniture, &c.

FROM RALPH T. PARKER, Rockport, Mass., who has commenced the Hardware business, carrying Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Agricultural Implements, Paints and Oils.

FROM RAMSEY & STOHL, Marvin, S. D., who have bought the retail Hardware business of Arvidson & Lafstedt, handling Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Window Glass, Agricultural Implements, Paints, Oils and Sporting Goods.

FROM J. A. PENCE & SON, who have engaged in the retail Hardware business in Madison, Neb., handling Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Window Glass, Paints, Oils, Sporting Goods, Electrical Supplies and Plumbing.

FROM O. J. MORSE, who has purchased the retail Hardware business of the McKinnon Hardware Company, Shelby, Mich., dealing in Shelf and Heavy Hardware, Stoves, Tinware, Window Glass, Agricultural Implements, Paints, Oils, Buggies, Wagons, &c.

FROM CAIRO LUMBER COMPANY, Cairo, Ill., which will add to its regular lines a stock of Shelf Hardware, Window Glass and Paints and Oils.

FROM ARTHUR HARDWARE COMPANY, INC., Elmore, S. C., which has been chartered to conduct a retail business, handling Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Window Glass, Agricultural Implements, Paints and Oils, Buggies, Wagons, Harness and Saddlery.

FROM BLAIRSBURG HARDWARE COMPANY, J. P. Talcott, proprietor, Blairsburg, Iowa, which has purchased the retail business of A. R. Titus, dealing in Shelf Hardware, Stoves, Tinware, Window Glass, Agricultural Implements and Sporting Goods. T. D. Rutledge is the manager. Mr. Talcott also owns a Hardware store at Williams, Iowa.

FROM L. H. JONES, Duluth, Minn., P. O. Box 775, who is preparing to erect a retail Hardware store, and is desirous of having catalogues of Shelving, Show Cases, Bolt Cases, Desks, Filing Cabinets and everything for equipping a modern Hardware establishment.

FROM SAMUEL LABBET & SON, Lebanon, Ore., who are about to begin the erection of a new building for their retail business, handling Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Agricultural Implements, Paints and Oils, Sporting Goods, as well as tinsmithing and plumbing.

FROM HILL & Co., who have succeeded to the retail Hardware business of Hill & Chisley, Harrisburg, Ore.

FROM SAMUEL BROS. HARDWARE COMPANY, Pryor, Ore., which is rebuilding the store recently destroyed by fire. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Agricultural Implements, Paints, Oils, Sporting Goods, Buggies and Wagons.



C. H. Miller Hardware Company's Float as It Appeared in Old Home Week Industrial Parade at Huntingdon, Pa.

Industrial Parade Float.

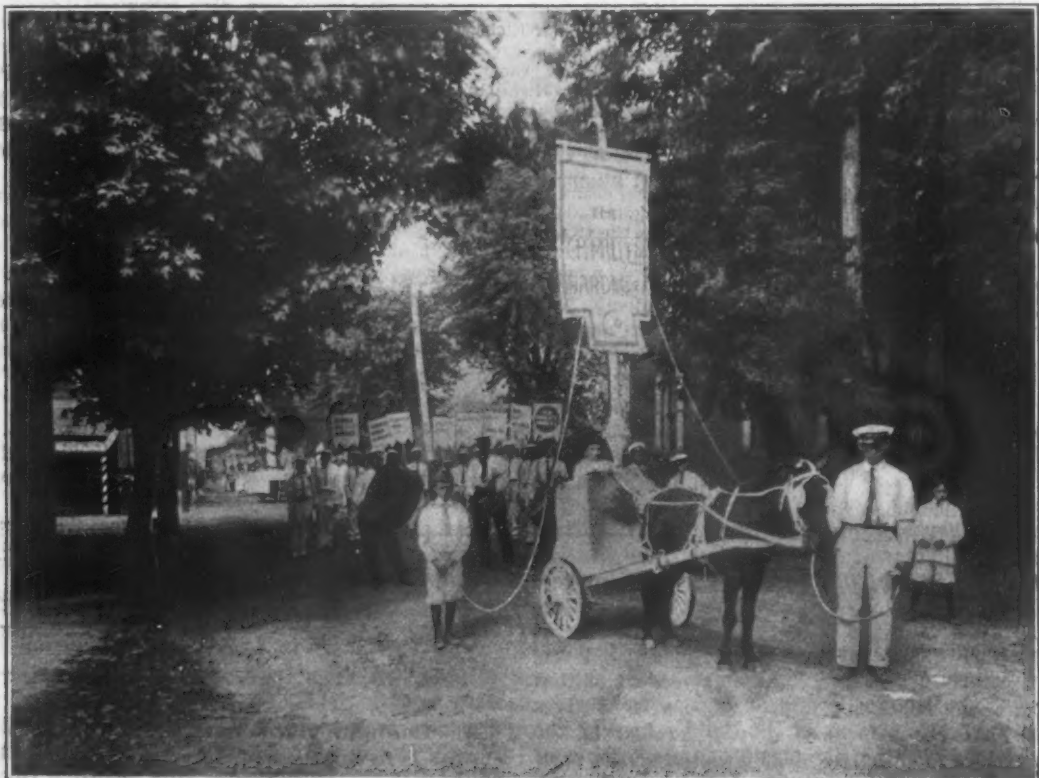
Modern Ranges and Cooking Utensils the Basis of an Elaborate Exhibit in Old Home Week Procession.

THE week of September 5 to 11 was old home week at Huntingdon, Pa. The occasion attracted what was probably the biggest crowd of visitors in the history of the city. The farmers from all over Huntingdon County and surrounding counties attended in large numbers,

while there were many visiting friends from States far and near. Governor Stuart graced the occasion with his presence on Thursday, Industrial Day, and made an address. The town was beautifully and elaborately decorated. The principal streets at night were illuminated on both sides with garlands of electric lights, and at the crossings were arches of electric lights in red, white and blue.

Programme of the Week.

The celebration was informally opened on Sunday, the 5th, with services in the churches. On Monday at 8 a.m. there was a procession of mounted trumpeters and



Pony Cart Which Received First Prize in Old Home Week Floral Parade at Huntingdon, Pa.

heralds, who announced the formal commencement of the old home week exercises. At 10.30 a.m. there was an official reception assembly at the Court House, and in the afternoon the school children paraded. The morning of Tuesday was occupied with the agricultural and historical parade, and in the afternoon there was a public meeting at the Court House.

A floral parade was the chief feature of Wednesday's exercises, the evening being devoted to special receptions and sociables to all visitors at the churches. On Thursday there was a military, civic societies, fire department and industrial parade, and on Friday the veterans of '61, the volunteers of '98 and the sons of veterans paraded. Saturday was appropriately designated "Auld Lang Syne Day," and was largely occupied with family and society reunions.

In addition to these special features of the week, there were many other unofficial exercises and amusements, including baseball games, airship displays, theatrical performances, fire exhibition and horse racing, and there was no lack of opportunity for keeping busy during the entire period. That every one might be posted as to the events of the week an official programme was issued in which the doings of each day were chronicled.

A Hardwareman's Part in the Industrial Parade.

The handsome and elaborate float which is reproduced herewith was a feature of the industrial parade on Thursday, being the contribution of the C. H. Miller Hardware Company of Huntingdon. This float was drawn by four horses and was 20 ft. long by 8 ft. wide, with pillars 1 ft. square and 7 ft. high. The float was covered with muslin, which was painted white with alabastine and then lettered, producing a beautiful white effect. The tops of the pillars or capitals were covered with 1-in. Rope and gave the appearance of huge, old-fashioned

being a reproduction of the kitchen of the "Old Hancock House" at Lexington, Mass. A leaflet issued by the C. H. Miller Hardware Company and distributed generally during the week supplied interesting particulars in regard to this historical feature. The kitchen was occupied by a girl and a small boy both in Revolutionary costume, the dress worn by the girl being something like 100 years old. The twentieth century kitchen which occupied the rear of this attractive float and made such a striking contrast was equipped with modern Range, Aluminum Cooking Utensils, &c.

The employees of the company, who acted as postillions and who carried banners, were dressed in white with green belts and green neckties—green and white being the town's colors. The fife and drum corps were uniformed in white caps and shirts and dark trousers to distinguish them from the employees. Three boys and postillions preceding the exhibit were all in white.

Mr. Miller was also represented in the floral parade on Wednesday, and the pony cart which was entered by him, and which by the way received the first prize, is also reproduced. The occupants of the cart were his daughter and little boy, who received a warm greeting all along the line of march.

F. D. Foot's Booklet on Fishing Tackle.

Hints and Suggestions from a Veteran Fisherman.

AN interesting and suggestive booklet of 32 pages on the subject of fishing and fishing tackle has lately been issued by Homer Foot & Co., Springfield, Mass. It was prepared by F. D. Foot, president of the company, for the purpose of helping those who are lovers of fishing and angling but who do not, for want of experience, know how to go about it.

Mr. Foot is an enthusiastic fisherman, with 40 years' experience in fly fishing, trolling, bait fishing and brook fishing in Maine and other New England territory, and the thought of getting up the booklet occurred to him because of the large number of persons who come into the store and buy tackle without any knowledge whatever of the proper flies and the proper kinds of rods to use and the method of baiting or luring the fish. An idea of the manner in which the text is presented is afforded by the reduced reproductions of two of the pages given herewith.

The house carries what is probably the largest stock of Fishing Tackle in Springfield, the effort being made to embrace everything that would be called for by the fisherman. The booklet, while containing many valuable pointers in regard to the subject, is also

MR. FISHERMAN

The author of this little book offers a few simple ideas and suggestions as to the best Fishing Tackle to use and its application in the successful capture of the Trout, Salmon, Bass and all the ordinary fish that thrive in our ponds and streams.

His many years of experience as a lover of angling in our local brooks, also covering many delightful trips and vacations to Maine and Canada waters, has given the writer much pleasure and generous success, as well as practical knowledge that may be of some help and use to you, Mr. Fisherman; friend and lover of the gentle and fascinating art of angling.

If you are successful, the pleasure is mine as well as yours.

F. D. FOOT

"There is certainly something in angling that tends to produce a gentleness of spirit and a pure sincerity of mind"—WASHINGTON IRVING.

"There is no genuine enjoyment in the easy achievement of any purpose; there is no bread so sweet as the hard-earned loaf of the man who works for it. The rule that holds good in the school of the sportsman."—"BOURGEOIS."

SUCCESSFUL HINTS

1. Use in brook fishing plenty of line, 10 to 20 feet from tip, especially on bright days, as fish will not see you or be alarmed.
2. Approach your brook and pool

1

Brook Trout, and How to Take Them

In brook fishing use worms, grubs, crickets, minnows (small, artificial), and small Fly Spoons are often good on the big ones in large pools, or a small, plump raisin will do the trick, skittering on top and under water. Use **stiff Bait Rod** or **Bristol Steel**, a fine all-round Bait, Fly or Bait Rod, a good single Click Reel, \$1.50 to \$4.00. Don't use multiplying reels **ever** for brook fishing, they are only right and fit for bait casting and trolling.

A good Bait Rod sells for \$3.00 to \$8.00 each. We have all grades and styles, some 30 in cheaper rods, \$1.00 to \$5.00 each. Also High Grade Bamboos, Greenhart, Bethabarra and Dagama from \$3.00 to \$15.00 each; also Fly Rods on all above grades and prices.

Click Reels to carry 40 or 60 yards of good enameled waterproof silk lines, costing, from 3 to 6 cents a yard. Level Lines are best for bait fishing. Single Gut Bait Leaders, three feet, should always be used on end of bait line and best snelled hooks. Bait leaders are almost invisible and give worm the appearance of floating free and make bait more attractive. On bright days, by using will get more fish; don't snarl or catch easily and will come off by shaking if fast to brush or twigs. You will have more pleasure and success and less trouble by using a 3-foot bait leader, attaching your line to one end and snelled hook to the other.

21

Pages from the Booklet on Fishing Tackle Issued Gratuitously by Homer Foot & Co., Springfield, Mass.

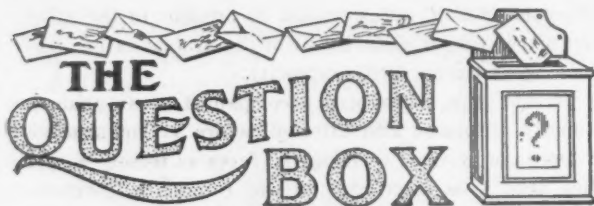
Baskets. Garlands of laurels swung from post to post and were entwined about the posts.

The Old Hancock Kitchen a Striking Feature.

The float was divided into two parts, the front portion representing a kitchen of the Revolutionary period,

more or less of a catalogue of the stock in this line carried by the house.

The Hardware firm of A. Anderson & Sons, Chillicothe, Ill., has been succeeded by Samuel Hicks, who has purchased the stock and business.



This department is open for the discussion of questions which arise in the practical conduct of the Hardware business. Our readers are invited to contribute, submitting inquiries or answering questions.

Correspondents are expected to give their names and addresses, but in order to encourage frank expressions of opinion the advice of our correspondents will be treated in confidence, names and addresses not being published.

For convenience, Questions or Answers should be addressed to THE IRON AGE QUESTION BOX, 14-16 PARK PLACE, NEW YORK.

How to Figure the Cost of Doing Business.

In computing the cost of doing business, should interest on the investment be included; which in the case of a corporation would be the amount of paid-up stock?

This question relates to an important matter in connection with the running of a store or other business enterprise. It recognizes that a merchant should know how much it costs him to carry on his business. Unless he knows this he will not know what percentage should

be added to the invoice price of goods in order to cover the general expenses and the profit to be realized. It is very clear that rent, salaries to himself and his employees, heating and lighting the store, advertising, cartage and many other expenses should be taken into account.

The question of our correspondent has two branches—first, whether the interest on money invested should be counted as part of the cost of carrying on the business, and, secondly, whether in the case of a corporation the capital invested would be the amount of paid up stock. On both of these questions there is much difference of opinion among accountants and business men, as shown in the following extracts from letters on the subject:

Answers in the Affirmative.

FROM A HARDWARE MERCHANT IN NEW YORK STATE: We would say YES, for if that same amount of money were invested, or even placed in the bank, it would have an earning power, or if they borrowed money, they would have to pay interest on it, which would be an expense to the business; therefore, all these things should be in to know the exact cost before profits are figured.

FROM AN INDIANA HARDWAREMAN: My answer is YES. The same rule should apply in this case as in the matter of rent. The money invested in stock will earn 6 per cent. interest if invested in other good securities, and has this certain earning value to the corporation before opening up business, so that it would yield 6 per cent. interest without any labor or risk. Therefore it costs that much to do business before you actually commence.

However, if the same corporation owns property, it should not charge rent and interest on the full amount of paid up capital, but should eliminate the rent item or charge rent on the property to the amount of the investment in property and interest on the balance of the in-

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vestment after deducting the value of the property. For example:

<i>Paid up capital</i> -----	\$300,000
<i>Value of property</i> -----	100,000
<i>Rent on property (per year)</i> -----	6,000
<i>Interest on active capital</i> -----	12,000
<i>6% interest on investment</i> -----	18,000

This should be added to the cost of doing business just as surely as the item of freight and salaries, and should be considered in the cost of handling goods and therefore included in the actual cost of goods if you want to make it come out right at the end of the year.

It cannot be made up any other way in the Hardware business these days.

Another View of the Matter.

In the letters given below our correspondents answer the question in the negative, not considering it proper that interest on the merchant's investment should enter into an estimate of the cost of carrying on the business:

FROM AN OHIO HARDWARE MERCHANT: The writer has never believed that it was a fair proposition to figure interest on the firm's or corporation's investment, for the reason that the money invested is there for the purpose of profit, and is bringing its interest every day it works.

We see no other just way of looking at this matter, and it would seem to the writer that any conservative, fair business man would count it a double charge and an unfair charge on his expense account to add an interest account to working money already invested for the purpose of profit.

FROM A NEW ENGLAND ACCOUNTANT: It would be very unfair and unwise to include any such computation as a separate item in the cost of doing business. Such an item properly belongs in profit and should be so regarded, the amount added to cost to provide for net profit desired (or established by custom) taking care of it.

In this case the price paid by the consumer, established by custom and competition, very naturally affects the amount of net profit.

FROM AN ILLINOIS HARDWARE JOBBER: We think it would be improper to charge as an item of expense interest on the amount invested in the business. Investment is made in business for profit. The net amount realized above all expenses shows the net earnings on the capital invested; so it is easy to tell whether the business is paying a greater return than could be realized from the money if invested in securities which are not subject to the risk involved in a commercial enterprise.

Excessive Freight Charges.

The following letter from a West Virginia house briefly describes a recent experience in the line of excessive freight charges, and asks for information as to how to proceed with a view to obtaining redress:

A railroad company has recently charged us for carrying 1500 lb. of freight, when, in fact, only 850 lb. was carried. We have asked the railroad to correct the error, and the officials refuse to do anything. To whom can we go for relief in the matter?

The first effort on the part of our correspondents should be to get together all documents bearing directly on this shipment and overcharge, including bill of lading, expense bill, copy of invoice, and whatever in tangible form serves to establish unmistakably the consignees'

contention, all of which should be brought to the attention of the proper claim agent of the system rather than some agent having little authority.

If this fails, the papers, accompanied by an affidavit, properly witnessed and attested before a Commissioner of Deeds or Notary, reciting the facts as tersely as possible should be forwarded to the Interstate Commerce Commission, Washington, D. C. This tribunal is doing excellent work along these lines, and is organized to handle such matters expeditiously by reference to the proper department for action.

As claims of this general character usually fall into well defined channels, the principles have frequently been adjudicated in the courts, so that if the claim is just it is often only necessary for the transportation officials to have the case presented in concrete form to obtain a settlement.

Displaying and Storing Cocoa and Wire Door Mats.

The following inquiry in regard to a desirable method of storing and displaying cocoa and wire door mats comes to us from a Hardware merchant in New York State:

FROM NEW YORK: What is the best way to store and display cocoa and wire door mats? So far we have found the best method to be keeping the mats rolled up. With a needle we put a piece of strong cord through two parts of the mat and tie. But we are not satisfied with this method and would like to know of something better.

We are very much interested in your Question Box and believe it is doing good.

Methods of Several Merchants.

This question has been submitted to several Hardware firms handling this line and we are indebted to them for the following replies:

FROM MICHIGAN: We keep these goods on a platform similar to a stove platform, in the different qualities and sizes, with prices attached to same. When we have a prospective purchaser for either the wire or cocoa mats we show him the line, and after ascertaining what he wishes to pay we take down the desired size and quality.

FROM INDIANA: We handle the steel mats in a modest way, but do not sell the cocoa mats. We find that the most satisfactory way of displaying these goods is by hanging them on the face of the counter. The customers cannot possibly miss seeing them and the room is not used for anything else.

If we did not hang them on the face of the counter we would suspend them in some other place because we believe hanging is the most attractive way of displaying the goods. Sometimes, however, we have also placed a pile of them in the aisle near the front door.

FROM KENTUCKY: The only display that we have made of cocoa and wire mats has been simply to use a small platform about eight inches high. The platform is painted and we stack the different sizes and styles of mats one on top of the other along the side of an aisle with a tag on each mat showing the price.

We have never arranged a special rack for the purpose of displaying these goods, but we would be interested in knowing how others do it as we are quite sure that our method can be improved upon, as it takes up too much space and requires too many mats to make a respectable showing.

We shall value further suggestions from our readers in regard to methods which they have found effective and convenient in handling this line.

Trade Winning Methods.

Using Store Papers and Bulletins as a Medium for Attracting the Attention of the Public.

J. R. SCHUYLER, Bloomsburg, Pa., has lately commenced the publication of a store paper under the title of "Schuyler's Hardware Bulletin." It consists of four pages, 11 x 15 in., and in addition to calling attention to some of the lines handled contains the local railroad time tables and here and there some humorous matter. The store's road sign

**YOU CAN GET IT AT
SCHUYLER'S
Hardware Store**

is reproduced at frequent intervals in the bulletin. Under the head of "Sit Up and Take Notice," the purpose of the paper and the policy of the store are set forth, as follows:

In issuing this, the first number of our *Hardware Bulletin*, we do so for the purpose of bringing our customers in closer touch with our store and business.

We appreciate and want your trade, and we realize to get it we must make it of interest to you to deal with us.

Methods Which Will Be Tabooed.

We do not propose to come at you with the methods used by many in various advertised sales as offering you a dollar's worth of merchandise for 50 cents, and then leaving you to discover the deception afterward at your leisure. Those catchy advertisements may serve their purpose of helping a merchant dispose of a lot of unsalable goods, but they lack "being all wool and a yard wide," and will not wear with the people.

Full Value and Merit.

You, as well as most people, enjoy dealing where after years of experience you feel warranted in believing you are getting full value for your money.

Years of training in this business has made us conversant with the manufacturers and the reputation of the quality in the various lines of goods in our stock. In dealing with us you get the advantage of this and can rely upon an article being exactly as we represent it.

A careful comparison of quality will convince you that our prices are as low as the same goods can be purchased in any locality.

Our aim is to be just and fair in all our dealings that we may merit and win your confidence. We are not infallible and may make errors, which we will at all times gladly rectify if possible.

Old and New Customers.

There is nothing more encouraging or pleasing to us than greeting old customers in our store. It's like a meeting of "the old folks at home," with the full appreciation of the lines that "blessed be the ties that bind."

If you have been dealing elsewhere, kindly give us a trial and see if we cannot get together to our mutual advantage. New goods are constantly coming on the market and our lines are so varied that it is impossible to carry all in stock. On all the leading roads coming into town you see the familiar sign, "You can get it at Schuyler's Hardware Store," until it has become a household word.

Our long experience has made us familiar with where most everything is made and we will at all times take pleasure in imparting information and ordering what may be desired.

Bard & Cheney's Bulletin.

The last number of "Plain Talk," issued by Bard & Cheney, Port Allegany, Pa., is referred to as a special road drag number, containing, as it does, a valuable article on the subject of how to make better roads. The article describes and illustrates the method of building and operating a split log road drag, an excellent and economical means of maintaining good highways. This

booklet, as already noted, is a 24-page publication, 6 x 9 in. in size, and besides calling attention to some of the lines handled by the firm also presents some advertising of other Port Allegany merchants, interspersed with humor and general reading matter.

The Hardware and Paint Hustler.

Another firm which has entered upon the publication of a bulletin in the interest of the store is G. V. & F. W. Cameron, 284 Central avenue, Albany, N. Y. Their medium, which is entitled "The Hardware and Paint Hustler," is 12½ x 10¼ in. and consists of four pages. It is intended to issue it quarterly, at the beginning of each season. The plan and purpose of the "Hustler" is formally explained to the recipient as follows:

To keep YOU posted on seasonable and reliable merchandise to be found in our stock, in order that you may anticipate your requirements and may become familiar with a progressive and dependable source of supply.

About 5000 copies of the paper were printed, 4000 of which were mailed to local property owners, the remainder being tied up in packages sent out from the store. The firm reports that it has found this kind of advertising very productive of results and feel much encouraged at the reception the bulletin has met with at the hands of those to whom it has been sent.

Memorial to Thomas J. Leary.

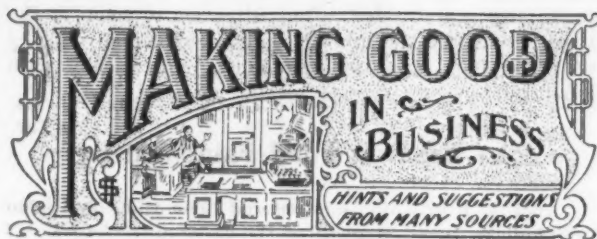
AT a special meeting of members of the Gun trade of New York, held August 30, a minute was adopted, the text of which bore testimony to the worth and esteem in which Thomas J. Leary, whose death, August 23, has been noted in our columns, was held by his associates. The memorial has been handsomely engrossed in book form, bound in black seal and signed by each of those present at the meeting, and presented to Mr. Leary's sisters. The signers were as follows: P. G. Sanford, Winchester Repeating Arms Company; James Gales, Schoverling, Daly & Gales; T. W. Stake, Schoverling, Daly & Gales; William J. Bruff, M. Hartley Company; Henry T. Folsom, H. D. Folsom Arms Company; R. A. Lau, J. H. Lau & Co.; Charles J. Godfrey, Jr., Charles J. Godfrey Company; A. H. Funke, H. Werlemann, Charles F. Wiebusch, Wiebusch & Hilger, Ltd., and C. H. Biermann.

BUHL & SONS COMPANY, wholesale Hardware, Detroit, Mich., has under construction a new six-story warehouse adjoining its present property. This building will contain over 85,000 sq. ft. of floor space, which will be used for a warehouse and general office. While but six stories will be put up at present, the foundations of the structure are built to carry 10 stories. It will be ready for occupancy about March 1, 1910.

THE RUSSELL & ERWIN MFG. COMPANY OF NEW YORK, 92-96 Lafayette street, New York, has issued as a souvenir of the Hudson-Fulton celebration a 64-page illustrated book of "Palmer's Views of New York, Past and Present," from 1609 to 1909. It is profusely illustrated, accompanied with appropriate descriptive matter, and shows on pages facing each other the marked changes which have occurred during the lapse of three centuries.

UNDER the name of the Model Stove Company, the Home Stove Company, Indianapolis, Ind., has established a branch house at Des Moines, Iowa, in which a stock of goods will be carried for the convenience of the Western trade. This branch is under the management of Otto F. Ang. It is stated that future plans of the company contemplate the establishment of a foundry at Des Moines for the manufacture of Stoves.

GREENHALGH & SON, La Valle, Wis., have been succeeded by the La Valle Hardware Company incorporated and capitalized at \$10,000 by L. O. Wahler and others.



Success.

Success is the hand trained to do its work,
The eye that sees that the lines run true,
The ear that hears when the truth you shirk,
The brain that conceives old truths anew.

Success is the strife with the heart aglow,
The effort we make for our fellow man,
The pride that laughs at the outer show,
The soul that fulfills its highest plan.

—E. H. Ellsworth.

The Plodder Travels Far.

Don't trust to luck, but hard work. Drudgery is the gray angel of success.

Good habits and the ability to grasp opportunities and see possibilities are indispensables.

Such tools as honesty, order, patience, self-denial, accuracy, promptness, punctuality must be always at hand, oiled and sharpened. Be ready for emergencies and never doubt.

There is no royal road, no special gift. "It is the rut, the plod, the grind, the humdrum that win."

Make your work your hobby. If you cannot realize your ideal, idealize your real. Be cheerful, look for stars, not sunspots. If you fall, don't forget that "your greatest glory consists in rising every time you fall."—*Horace Falls.*

Making Work Worth While.

No great thing—no pleasure-giving thing—has ever been created without an enthusiastic love behind it.

The joy of the man who does a worthy work well is the keenest joy in the world.

The books, the poems, the pictures that have moved the world to tears and laughter, to thought and action, have come from hearts overflowing—have first, and more intently, thrilled the creator.

He only fails who derives no joy from his labor—gives no joy by his labor.

Love of our work alone makes it worth while—to ourselves and others.—*Glenwood S. Buck.*

The Man of Initiative.

Can you imagine an exhibition of initiative by one who never has a definite opinion of his own, who never really decides a question for himself; one who doesn't know when he's right, and so is always afraid he's wrong?

Hardly.

That's the mental attitude of stagnation, of failure, and, remember, the words of the Good Book, "As a man thinketh in his heart so is he," are just as true in building this phase of character as in developing what we are pleased to term the normal nature.

If we are constantly creating for ourselves an atmosphere of inaction, indecision, fear and failure, how can we expect to meet the crises successfully? How can we expect recognition of our ability at the hands of others if we do not recognize ability in ourselves? And is confidence in one's self all sufficient? No, self-confidence

without action is only idle egotism. There must be action, achievement.

The man of initiative is that man who, with a belief in his own power to do things, gets busy.—*Wilfred C. Kellogg.*

Working New Trade Before the Old.

Of course there is always the exception, but as a general rule it is better to see the prospective customer first. Particularly when doing the introductory work, which is the foundation of our business growth, you should aim to go after the dealer you are not selling first. When you start out fresh in the morning, then is the time to go after the fellow who is not handling our lines. All that you sell him is clear gain. It's easy enough to see your regular trade and friends afterward. The habit of many salesmen is to rush out among the good customers and get their business and then try to land new trade.

If you will think it over it is a good deal like working backwards. Should you get a big bunch of business from your regular trade, you are apt to feel satisfied, and, if you don't, you will feel disappointed. No salesman can work new trade when he is satisfied, in this sense, or discouraged or disappointed.

Adding to the business structure every day by lining up new trade and bringing in new business, as well as taking care of the old, is necessary to our progress. When you sell an old customer you should drive home some new item that he is not buying. It's another chance to build the business. Selling to a customer who is satisfied, who likes us

The Right Sort of Salesmanship.

and likes our lines, is not salesmanship. Calling on this class of trade is merely to show that we are giving good service and to see that the customer does not get away from us for lack of intelligent attention, and that his business grows by his adding new items to his orders. It is much easier to increase sales on our lines than we are apt to think and the fault is usually with the individual's sales effort, knowledge of his line or plan of action. It is not the goods we sell, because we can all point to cheerful, satisfied customers on every item, and if a line can boast of this, it is salesmanship that will get us more of the same kind of trade.—*From a Talk to Salesmen by Geo. H. Eberhard.*

A NEAT ILLUSTRATED PAMPHLET announces the second annual industrial exposition of Saginaw, Mich., which is to be held in the Auditorium Building in that city October 1 to 9 inclusive. The exposition is held under the auspices of the Wholesalers' and Manufacturers' Association. Its primary object is to upbuild, enlarge and extend the diversified industries located in the city and its vicinity as well as to give publicity to the advantages to be derived by the purchases of supplies from the local wholesale and retail establishments. John Popp of the Hardware firm of Popp & Wolf, is a member of the Executive Committee having charge of the arrangements.

THE ELBURY & WEISENBORN COMPANY, INC., Denver, Colo., has been organized with a capital stock of \$100,000 to handle the product of the National Wire & Iron Works, Houston, Texas, and the Weisenborn Mfg. Company of Indianapolis, Ind., in territory between the Missouri River and the Pacific Coast. George P. A. Weisenborn, president of the new Denver branch, is largely interested in the Indianapolis and Houston works, which manufacture Cotton Choppers, Tile Machines and Agricultural Implements.

THE FIRM OF HEALY BROTHERS, Eureka, Humboldt County, Cal., dealers in general Hardware, Wagons, Buggies, Farming Implements, Paints, Sporting Goods, Coal, Iron and Steel, &c., has been incorporated under the title of Healy Brothers Company, with a paid up capital stock of \$200,000. In addition to the lines heretofore handled, Automobiles will be added.

Death of Oliver P. Malone.

OLIVER P. MALONE of the Russell & Erwin Mfg. Company's New York house, died Friday, September 23, of a complication of ailments, some of which he had suffered from for some time past. He was born in and lived in Brooklyn, and entered the employ of Russell & Erwin Mfg. Co. October 10, 1887, going there direct from school. He filled several positions from that of office boy and at the entry desk to that of head of the export department, in connection with which several years ago he made a business trip of about three years around the world. At that time he carried large lines of samples, introducing the wide range of goods made by the company, the effect of which has been continually manifest in orders since received.

He was held in high esteem by the heads of the house, and was universally liked by his associates, and with the trade, domestic or foreign, he was a favorite. He was about 40 years old and leaves a widow.

Emery Hardware Company's New Catalogue

THE Emery Hardware Company, Bradford, Pa., jobber of Hardware, Guns, Ammunition, Crockery, Paints, Oils and Sporting Goods, has just issued illustrated descriptive catalogue No. 9, containing nearly 200 pages, bound in stiff cloth covers. The book is a creditable volume, being attractively arranged and printed. The company's business was established in 1876.

Gas and Electric Portables.

The Goodwin & Kintz Company, Winsted, Conn., has just issued 24-page illustrated supplement B, showing important additions to the line and supplementary to Catalogue No. 31. In it are reproduced large assortments of fine portables for either gas or electricity. The company's portables are referred to as mechanically perfect and invariably straight and plumb.

Brick and Plastering Trowels.

Wiebusch & Hilger, Ltd., 106 Lafayette street, New York, sole agents for William Rose & Bros.' entire line of brick trowels, most of which are fully warranted, are prepared to furnish a number of new patterns designed especially for laying bricks in cement. This work necessitates especially wide trowels to carry a sufficient quantity of cement which is in a more fluid state than mortar usually is. The special Philadelphia pattern is made with wide and extra wide heel in ten sizes ranging from $9\frac{1}{2} \times 5\frac{1}{2}$ to $12 \times 6\frac{1}{2}$ in. with hardwood handles 5 in. long, and in the same style and sizes with leather handles $5\frac{1}{4}$ in. long. Rose trowels are made in three weights, all orders being filled with standard weight unless otherwise specified. Limber trowels are made for those who request them; the Norfolk or extremely light trowels are supplied at a slight advance, and being too thin for ordinary use are not warranted. In the new goods in brick and plastering trowels there are 10 sizes in the No. 10 Philadelphia pattern in lengths from 8 to 14 in. inclusive. The No. 221 wide heel range from $9\frac{1}{2} \times 5\frac{1}{2}$ to $11\frac{1}{2} \times 6$ in., and the No. 223 extra wide heel from 10×6 to $12 \times 6\frac{1}{2}$ in. all in 6 in. hardwood handles. The same pattern and sizes with 6 in. leather handles become Nos. 310, 321 and 323 respectively. The standard trowels are offered as "legal tender for the bricklayers' dollars."

Hay-Budden New Process in Anvil Making.

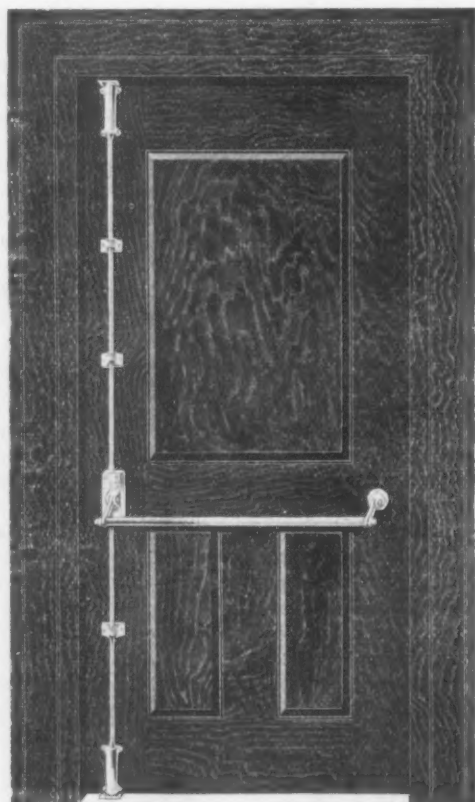
The Hay-Budden Mfg. Company, 254-278 North Henry street, Brooklyn, N. Y., manufacturer of Wrought Anvils, has always followed the practice of welding a solid forged iron top to a forged bottom and then welding on a steel face plate, a method followed by leading Wrought Anvil makers for years. During the past year, however, the company has made up the bulk of its product according to an improved process which makes un-

necessary the welding on of the steel face plate. After much experimentation the company has succeeded in obtaining for the entire top of its Anvil a steel of such analysis that it will take a satisfactory temper and yet be sufficiently strong and tough to withstand the usage expected of a high grade Anvil. The steel top is forged in such a manner as to impart additional strength and toughness to the material.

By this method there is overcome what has been a weakness in the Wrought Anvil—that of loose faces, for by this late process it is obvious there cannot be loose faces. By an operation peculiar to this product the steel top is welded to the forged base in such a manner as to insure a lasting union at that point. An earlier announcement of this progressive step has not been made because it was thought best that a number of these Anvils should first be placed in actual use and a working test made. During the past 14 months over 10,000 of the new process Anvils have been shipped with entirely satisfactory results to the users.

The Russwin Panic Exit Bolt.

The Russell & Erwin Mfg. Company, New Britain, Conn., and New York, is making the Russwin Panic-Exit Bolt, which, as the names implies, is intended for use on schoolhouse, theater, assembly hall and public building entrances and exit doors. The construction of this bolt is such that the slightest touch on the bar, which extends horizontally across the face of the door, will instantly



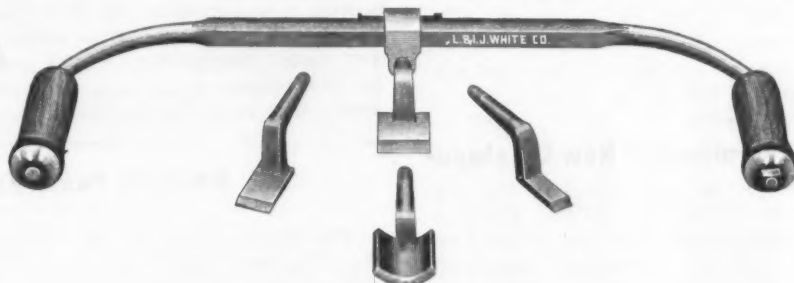
The Russwin Panic-Exit Bolt as Fitted to Door.

release the bolting members and open the door. In the various types of locking mechanism ordinarily in use on entrance and exit doors the pressure against the door by a panic-stricken audience will almost invariably cause a binding of bolts, making it impossible to open the way to safety. With the Russwin Panic-Exit bolt any pressure upon the door accelerates the unlocking action. This device is sensitive in action yet most substantial in construction, all parts being made of solid bronze metal castings with the exception of the bolt heads which are hardened steel, each part machined and carefully fitted. Various types of this bolt are made to meet various requirements. For fire exits a bolt allowing exit at all times but permitting no entrance; for double entrance doors the bolting mechanism on the dummy half of the

door and a Russwin unit lock set on the active half; both doors in case of necessity being thrown open by pressure upon the bar extending across the face of the dummy half. For classroom or entrance doors the bolt has a side-latching mechanism operated from the outside by a knob and inside by the usual bar across the face of the door. All types while operating in different ways secure the instant releasing and opening of the door.

The Icy-Hot Bottle.

The Icy-Hot Bottle Company, 216 Post square, Cincinnati, Ohio, has recently made an important improve-



Adjustable Auto Body Draw Knife.

ment in the construction of its Icy-Hot bottle. It is now made entirely demountable, thereby making sterilization possible. The rubber ring D fits snugly over the neck C. The bottle is pushed against the top of the case until the neck of the bottle protrudes beyond the top of the metal case. The bottom is then put on and held in position by the spring K. The felt pad I presses against the bottom of bottle jamming it tight into the rubber and jamming the rubber against the case in such a way that the rubber makes a watertight joint and holds the bottle in position. By causing the top of the neck of the bottle to protrude beyond the metal casing the liquid does not come in contact with the metal of the case when pouring out of the bottle. The rubber at the top, the felt at the

complicated about the Icy-Hot bottle and that a child can use it as well as an adult. This new feature will, it is thought, further the sale of the bottle, especially as there is no increase in the price.

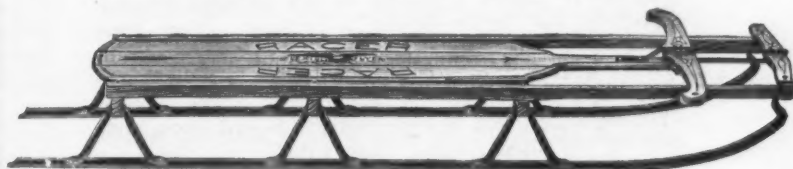
Adjustable Auto Body Draw Knife.

The L. & I. J. White Company, Buffalo, N. Y., and 45 Center street, New York, among additions to its line recently made, has brought out the adjustable Auto Body Draw Knife, No. 35A. It is adaptable for use in otherwise difficult or inaccessible places, as any of the four cutters may be shifted from the center either way to the limits of the rectangular portion of the bar, as

occasion demands. As indicated by the illustration, any of the four cutters may be inserted in the holder and wedged securely at any point. The straight cutters measure $\frac{1}{2}$, 1 and $1\frac{1}{2}$ in. in diameter, and the gouge is $1\frac{1}{2}$ in. wide. The left wood handle is fixed, the right one being held in position by a square nut to permit of removal when slipping the knife holder on or off. Extra handles may be obtained if needed.

Flexible Flyer Racer.

S. L. Allen & Co., Philadelphia, Pa., has just enlarged the group of flexible flyers by the addition of the Flexible Flyer Racer. Its distinguishing qualities are that it is built low and rather narrow, with unusual length of runner extending well forward and to the rear to make it speedier. There are three standards on a side to in-

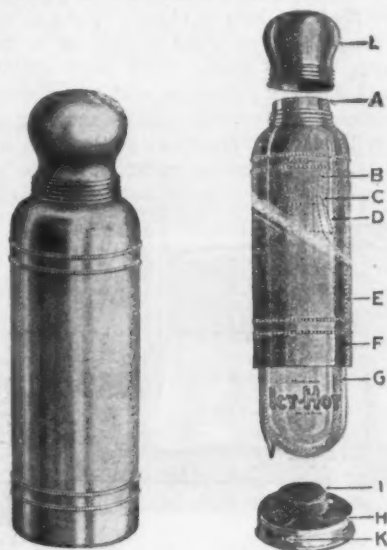


Flexible Flyer Racer.

crease the strength and the springing of the runners by the steering bar is accounted a strong point. The runner steel is of the company's patent section, which contributes markedly to better steering. Attention is also directed to the new shaped front. The flyer is 56 in. long, $6\frac{1}{4}$ in. high and 13 in. wide and weighs 16 lb.

The American and Gould Weather Strips.

The American Weather Strip Company, Grand Rapids, Mich., which is affiliated with the Hardware Supply Company of that city, manufacturing cabinet and building hardware specialties, has put on the market the American weather strip and Gould combination weather strip and parting stop. The American metal weather strip, Fig. 1, is made of heavier metal than other strips, and the metal being cut across the grain makes this strip very strong and durable. By the use of this type of strip windows may be fitted to run with ease and yet be sealed tight against the strongest winds and air currents. If the sash swells from excessive moisture it will not bind on the strip, and if it shrinks it will not rattle or allow the wind to blow through. One member of this weather strip sliding inside the other provides a perfect guide in which the sash slides smoothly. The thickness of the



The Icy-Hot Vacuum Bottle as Now Made.

bottom and the corrugated paper between the bottle and the casing so thoroughly absorb the jars that the risk of breaking the bottle through jars is greatly reduced. Should the bottle become broken, notwithstanding these precautions, or if it is desired to sterilize the bottle it may be instantly removed from the case or a new one inserted by pressing the spring K which releases the bottom. The drinking cup screws down on the cork B to hold the latter in place if the bottle is carried in a horizontal position when filled. The advantage of this new form of construction is that if the inner glass bottle becomes broken a new filler may be inserted by any one, avoiding the necessity of returning the broken bottle to the factory. The company states that there is nothing

metal is sufficient to prevent it from being easily injured and doubly protects against draft, as two grooves are cut in the sash instead of one, the grooves being metal lined not only to prevent wear but to cause the sash to run freely. Zinc is the material ordinarily used, but they can be furnished in brass, copper or bronze when so ordered. The weather strips are attached to the window frames with flat head brass screws and screw holes are countersunk. This system provides a metallic groove on both sides and bottom of sash in which one metal strip fills the other, the space between the meeting rails being as effectually closed by two gutter-like strips, one of which is a part of each sash. Fig. 2 illustrates the Gould combination weather strip and parting stop. The window frames are made plain, not grooved for the parting stops, but the sash is grooved for the weather strip

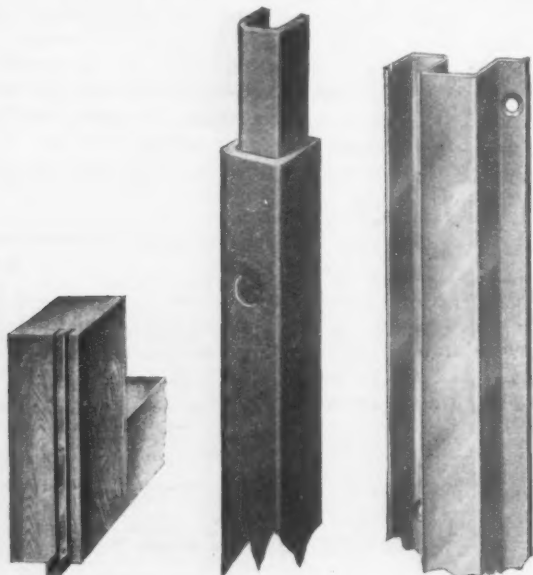


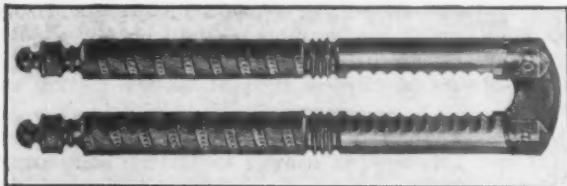
Fig. 1.—The American Weather Strip, Showing Edge of Sash Slotted to Receive Strip, and How One Member Fits Inside of the Other.

Fig. 2.—The Gould Metal Combination Weather Strip and Parting Stop.

at the factory in making, so that when the windows are put in a building the workman simply attaches the combination strips with brass screws. One edge is turned down about a sixteenth inch, so that it may be driven into the window jamb and prevent any air passing back of the strip, as well as making an excellent finish for the exposed edge. This weather strip is designed particularly for new buildings, but the American weather strip may be used equally well on old or new work.

Spring Nut Crack.

H. M. Quackenbush, Herkimer, N. Y., is marketing the patented concealed spring nut crack, here shown with a phantom illustration at jointed end to indicate the location and working principle of the spring. Emphasis is laid on the improbability of spring fracture, uniformity with which it works and easy action owing

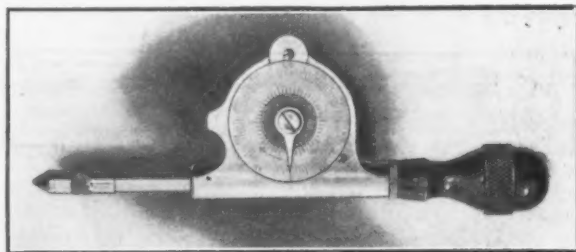


Concealed Spring Nut Crack.

to the position of it between the links and out of sight. As the spring is hidden the otherwise neat appearance of the nut crack is correspondingly enhanced and produces a pleasant surprise to users when first handling the device. It is obtainable in Nos. 0, 20, 20-S, 21 and 21-S in nickel and silver plated finishes.

B. & S. Speed Indicator.

The Brown & Sharpe Mfg. Company, Providence, R. I., has brought out the B. & S. Speed Indicator, which will register on either side; a distinctive feature. One side records the velocity of shafts and spindles running in one direction. The other side determines the speed of shafts and spindles running in the opposite direction, which eliminates the tendency to confusion and errors



B. & S. Speed Indicator.

arising where all readings are taken from one dial. The indicator registers revolutions in units, tens and hundreds. A small knurled wheel on the side of the case provides for quickly readjusting the tool after a reading has been taken. This wheel when turned reverts the disk that indexes 100 back to the starting point, a desirable feature where a series of readings is to be taken. The indicator is small, light and convenient to handle. The working mechanism is encased and protected from dirt and injury. The case is heavily nicked a dull finish. The point is of hardened steel, and is easily removed when worn. Each indicator is provided with a polished wood handle.

Yankee Martingale Snap.

The Covert Mfg. Company, Troy, N. Y., is known for the variety of attachments manufactured for harness. Some of the advantages of the Yankee Martingale snap, shown, are that the loop is placed at the same angle as the hook, instead of at right angles, as is true of the regular loop harness snap. This is to allow it to be snapped into the neck yoke ring, which is more convenient and saves wear on the strap. Also a martingale made in this way will last several times as long as when made the old way, as it prevents sliding and chafing on the



Yankee Martingale Snap and Its Relation to the Harness.

yoke. It is likewise more convenient than slipping the strap over the end of the yoke, and enough leather is saved, it is said, in making up to pay for the snap. When unharnessing it may be snapped in the hame ring, and thus hold the strap secure. The snap is made with a brass lever spring, the safety and durability of which

will be appreciated, as the rivet passes through the steel cap or tongue, the spring and the snap thus securely fastening both the cap and spring so they will remain intact and unimpaired indefinitely. These snaps are also made with a screw and roller, so they may be readily attached to martingale straps already made up.

Safe-T-Blade Stroppler.

The Central Sales Company, 70 Fulton street, New York, has put on the market the Safe-T-Blade stropper.



Fig. 1.—Safe-T Two-Edge Razor Blade Stropper.

for stropping safety razor blades. It is $6\frac{3}{4}$ in. long over all, made of an aluminum alloy, and is finely polished and nicked. There are but two parts and the Gillette or similar two edge blade may be instantly inserted for

stopping by lifting one of the handle halves, in one of which there are two 3-16 in. diameter bosses to fit the blade holes. But one edge of the blade is exposed at a

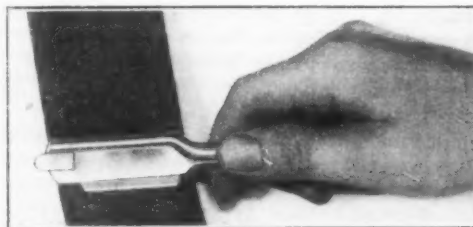


Fig. 2.—Stropper in Use.

line and the 5-16 in. back not only prevents any tendency to cut the strop, by protecting the reverse edge, but insures the proper angle of bevel for the cutting edge. As any razor blade, old or new, is improved by stropping, the device affords a convenient medium for accomplishing it and the shape, size and weight of the stropper are properly proportioned to accomplish the best results. They are put up singly in a paper carton.

PAINTS, OILS AND COLORS

[illegible]

THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades,
and a standard authority on all matters relating to those branches of industry.*

ISSUED EVERY THURSDAY MORNING.

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Current Hardware Prices.

General Goods.—Goods which are made by more than one manufacturer are printed in *Italics*. The prices named represent those obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

Special Goods.—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10 signifies that the price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, a book of 376 pages, which is sent free of charge to every subscriber to *The Iron Age*. It gives a classified list of the products of our advertisers and thus serves as an up-to-date DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists," 218 pages, price \$2, prepaid, contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

North's10%
Upson's Patent.....25%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....25%
Ives' Stop Bead Screws and Washers.....25%
Taplin's Perfection.....25%

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 3, \$0.65; 4, \$1.00; 5, \$0.50.
Quick Shifter, 1/2 doz. pairs, \$2.00@3.00
Spitzli Quick Shifter, 1/2 doz. pairs, \$1.65@1.75

Anvils—American—

Eagle Anvils1/2 lb. @ 9¢
Hay-Budden, Wrought.....1/2 lb. @ 9¢
Trenton1/2 lb. @ 9¢

Imported—

Swedish Solid Steel Paragon, 1/2 lb. @ 10 1/2¢
Peter Wright & Sons, 1/2 lb. 84 to 349 lb., 10 1/2¢; 350 to 600 lb., 11¢.

Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15&10%

Augers and Bits—

Com. Double Spur.....30%
Jennings' Patn., Bright. 65&10@70%
Black Lip or Blued.....65&10@70%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co.....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25&7 1/2¢
No. 30, R. Jennings' list, 25&13 1/2¢
Russell Jennings' list, 25&13 1/2¢
Mayhew's Counter Sink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60&10%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Snell's Star Auger Bits.....50&10%
Snell's Auger Bits.....65&10@70%
Swan's, Jennings' Pattern.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Ford's, Clark's Pattern.....66%
C. E. Jennings & Co., Steer's Pat., 25%
Lavigne Pat., small size, \$18.00; large size, \$26.00.....60&10%
Swan's.....60%

Gimlet Bits—

Common Dbl. Cut.....Per gro. \$3.00@3.25
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.25

Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00
Ames.....20&10%
Universal.....20%

Ship Augers and Bits—

Ship Augers.....10&10@50%
Ford's.....33 1/2&5%
C. E. Jennings & Co.:
L'Hommedieu's.....6%
Watrous'.....33 1/2&7 1/2¢
Snell's.....50%

Awls—

Elmore Tool Mfg. Co.:
Tinner's and Brad Awls.....55&7%
Scratch Awls.....60%

Axes—

Single Bit, base weights: Per doz.
First Quality.....\$1.75@5.00
Second Quality.....\$1.25@4.50
Double Bit, base weights:
First Quality.....\$7.00@7.50
Second Quality.....\$6.50@6.75

Axles—

Iron or Steel.

Concord, Loose Collar.....1/4@1/4¢
Concord, Solid Collar.....1/4@1/4¢
No. 1 Common, Loose.....3/4@1/4¢
No. 1 1/2 Com., New Style.....1/4@1/4¢
No. 2 Solid Collar.....1/4@1/4¢
Half Patent:
Nos. 7, 8, 11 and 12.....70%
Nos. 13 to 14.....70%
Nos. 15 to 18.....70&10@70&10&5%
Nos. 19 to 22.....70&10@70&10&5%

Boxes, Axes—

Common and Concord, not turned.....1b., 50¢@6¢
Common and Concord, turned.....1b., 60¢@7¢
Half Patent.....1b., 9¢@10¢

Bait—

Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—

Sash—

Caldwell new list.....50&10%
Pullman.....50&10%

Spring—

Light Spring Balances. 50&10@60%
Chatillon's:
Light Spg. Balances.....50&10@60%
Straight Balances.....40&10@50%
Circular Balances.....50&10@60%
Large Dial.....30&10@10%

Barb Wire—See Wire, Barb.

Bars—

Crow—

Steel Crowbars, 10 to 40 lb., per lb., 2 1/4¢@—¢

Prying and Pinch—

Elmore Tool Mfg. Co.....75%

Towel—

No. 10 Ideal, Nickel Plate.....1/2 gro. \$8.50

Beams, Scale—

Scale Beams.....40@40&10%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 1/2 doz. \$0.80;
Tinned.....\$0.85
No. 11 Wire Coppered 1/2 doz. \$1.15;
Tinned.....\$1.20
No. 10 Wire Tinned.....1/2 doz. \$1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro. No. 1, Tumbler Size, \$7.50; No. 2, Family Size, \$7.50; No. 3, Extra Family Size, \$24.00; No. 4, Hotel Size, \$30.00.
Holt-Lyon Co.:
Holt, per doz. No. 5, Jap'd. \$0.80;
No. A, Jap'd. \$1.15; No. B, Jap'd. \$1.85; No. 6, Jap'd. \$1.65.
Lyon, Jap'd. per doz., No. 2, \$1.35.
Taplin Mfg. Co.:
Improved Dover, per gro. No. 60, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd. \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel Tin'd. \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd. \$9.50; No. 300, Mammoth, per doz., \$25.00.

Bellows—

Blacksmith, Standard List:
Split Leather.....60@60&10%
Grain Leather.....50@50&10%

Hand—

Inch. 6 7 8 9 10
Doz. \$1.50 5.50 6.00 7.00 7.50
Inch. 10 12 14 16
Doz. \$3.50 11.00 13.50 14.50

Bells— Cow—

Wrought Cow Bells.....75%
Jersey.....75&10%
Texas Star.....50%

Door—

Reading Hardware Co.....50%
Horne, R. & E. Mfg. Co.'s.....55&40%

Hand—

Polished, Brass.....60@60&10%
White Metal.....60@60&10%
Nickel Plated.....50&10%
Swiss.....50&10%

Miscellaneous—

Farm Bells.....1b., 2 1/4¢@3¢
Church and School.....60@60&5%

Belting—

Leather—

First Quality, Ex. Hy., Strictly Short Lap.....60&10%
Standard.....70&10@70&10&5%
Light Double.....75&10%
Cut Leather Lacing.....45@50%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Competition (Low Grade).....70&10@75%
Standard.....60&10@70%
Best Grades.....50@50&10%

Benders and Upsetters,

Tire—

Green River Tire Benders and Upsetters.....20%
Tubes.....60%

Bicycle Goods—

John S. Leng's Son & Co.'s 1909 list:
Chain, Parts, Spokes.....30%
Tubes.....60%

Blocks

Tackle—

Common Wooden.....75@75&10%
Lane's Patent Automatic Lock and Junior.....30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined. 50&10@60%
Embossed.....50&10@60%

Bobs, Plumb—

Keuffel & Esser Co.....33 1/2&10%

Bolts

Carriage, Machine, &c.—

Common Carriage (cut thread):
3/4 x 6 and smaller. 70&12 1/2¢@—%
Larger and longer. 65&10¢@—%
Common Carriage (rolled thread):
3/4 x 6, smaller and shorter.....75¢@—%
Phila. Eagle, \$3.00 list.....80¢@—%
Bolt Ends, with C. & T. Nuts, 65¢@10¢@—%
Machine (Cut Thread):
3/4 x 4 and smaller.....75¢@—%
Larger and longer.....70¢@—%

Door and Shutter—

Wrought Iron:
Wrought Barrel Japanned,
Barrel Bronzed.....80&10@85%
Spring.....60&10@70%
Square Neck.....70&10@70%
Square.....75&10@70%
Ives' Mortise Door.....25%
Ives' Wrought Door.....25%

Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type. 60&10&5&2%
Star, Wood Screw Type.....40%

Star, Machine, Single Wedge.....60%
Star, Machine, Double Wedge. 60@10%
Star Toggle Bolts.....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60@10%
Style No. 1, Single.....60@10%
Style No. 100, Dbl. Jaw, Single. 55%
Lag Screw.....66%
Star Screw Anchors, Hollow.....40%

Plow and Stove—

Plow.....65¢@70%
Stove.....85¢@85&10%

Tire—

Common Iron.....80%
Norway Iron.....80%
American Screw Co.:
Norway Phila., list Oct. 16, '94.....80%
Eagle Phila., list Oct. 16, '94.....82 1/2%
Bay State, list Dec. 25, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '94.....80%
Eagle Phila., list Oct. 16, '94.....82 1/2%
Eclipse, list Dec. 25, '99.....80%
Russell, Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 23, '99.....80%
Norway Phila., list Oct. '94.....82 1/2%
Eagle.....82 1/2%
Shelton Co.:
Tiger Brand, list Dec. 23, '99.....80%
Phila., Eagle, list Oct. 16, 1881.....82 1/2%
Upson Nut Co.:
Tire Bolts.....80%

Borers, Bung—

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme.....15&10%

Braces—

Common Ball.....\$1.50@1.75
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....40%
Mayhew's Quick Action Hay Patent.....40&10%
Millers Falls Drill Braces.....25&10%
P. S. & W. Co., Peck's Pat. Revised List.....60@60&5%

Brackets—

Wrought Steel.....60@80&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Stanley's Pressed Steel.....75&10&5%
Stanley's Folding Brackets. 75&10&5%
Taplin Victor Handy Egg Beater Bracket.....1/2 doz. \$1.50

Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75&10%

Butts—

Brass—

Wrought.....65%
Cast Brass, Tiebout's.....40&10%

Wrought Steel—

BRIGHT.
Light Narrow, Light Reversible.....75&5%
Reversible and Broad. 75&10%
Loose Joint, Narrow, Light Inside Blind, &c.....75%
Back Flaps, Table Chest. 70%
BRONZED.
Light Narrow, Loose Pin. 55%
Light, Loose Pin, Ball Tip. 65%
Broad.....55%

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 000.....30%
Hendryx Bronze: Series 700, 800, 000.....30%
Hendryx Enameled.....35%

Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb. \$3.50 @ \$3.85
 Sharp, 1 prong, per 100 lb. \$3.50 @ \$3.85
 Burke's, 1 pg. Blunt Toe, 3/4¢; 2 pg. Blunt Toe, 4/4¢; 1 pg. Sharp Toe, 4/4¢; 2 pg. Sharp Toe, 4/4¢; Blunt Heel, 4/4¢; Sharp Heel, 4/4¢
 Perkins', Blunt, 3/4 lb, 3.65¢; Sharp, 4.15¢

Caps— Primers—

Berdan Primers, \$2 per M. 20¢5
 Primer Shells and Bullets, 15¢10
 All other primers per M. \$1.52 @ \$1.60

Cartridges—

Blank Cartridges:
 32 C. F., \$5.50 10¢5
 38 C. F., \$7.00 10¢5
 22 cal. Rim, \$1.50 10¢5
 32 cal. Rim, \$2.75 10¢5
 B. B. Caps, Con. Ball, Sugd. \$1.90
 B. B. Caps, Round Ball, \$1.40
 Central Fire, \$2.25 25¢
 Target and Sporting Rifle, 15¢5
 Primed Shells and Bullets, 15¢10
 Rim Fire, Sporting, \$5.00 50¢
 Rim Fire, Military, \$5.00 15¢5

Castors—

Bed 65¢10 @ 70¢
 Plate 60¢10 @ 70¢
 Philadelphia 70¢10 @ 75¢
 Gem (Roller Bearing) 70¢10 @ 85¢
 Steel Gem (Roller Bearing) 70¢
 Standard Ball Bearing, \$4.50 45¢
 Yale (Double Wheel) low list, \$4.00 @ 10¢

Chain, Proof Coil—

American Coil, Straight Link:
 3-16 1/4 5-16 3/8 1/2 5/8
 \$7.45 3.85 3.25 3.10 3.00
 1/4 5/8-1 1 1/8 to 1 1/4 inch.
 \$2.90 3.00
 German Coil, \$7.00 @ 5¢
 German Pattern Coil:
 6-0 to 1 70¢10 @ 5¢
 2 and 3 60¢10 @ 70¢
 4, 5 and 6 50¢10 @ 50¢10 @ 5¢

Halter—

Halter Chains, \$6.00 @ 60¢10
 German Pattern Halter Chains,
 list July 24, 97 70¢5
 Covert Mfg. Co.:
 Halter 30¢10 @ 10¢

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
 6 1/2-6 3/4, Straight, with ring, \$26.00
 6 1/2-6 3/4, Straight, with ring, \$27.00
 6 1/2-6 3/4, Straight, with ring, \$30.00
 6 1/2-10-2, Straight, with ring, \$35.00
 NOTE.—Add 2¢ per pair for Hooks
 Twist Traces: add per pair for Nos. 2
 and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of
 Straight Link.
 Eastern Standard Traces, Wag-
 on Chain, 4¢ 70¢10 @ 10¢

Miscellaneous—

Jack Chain:
 Iron 60¢10 @ 10¢70
 Brass 60¢10 @ 10¢70
 Safety and Plumbers' Chain, 75¢
 Gal. Pump Chain, \$1.40 @ 45¢
 Bridgeport Chain Co.:
 Triumph Halter and Coil, 35¢2 1/2 @ 40¢
 Triumph Dog 50¢10 @ 60¢
 Brown Halter and Coil, 45¢ @ 50¢5
 Covert Mfg. Co.:
 Breast, Halter, Heel, Rein, Stal-
 lion, Post, \$3.00 @ 10¢10
 Oneida Community:
 American Halter, Dog and Kennel
 Chains 35¢2 1/2 @ 40¢
 Niagara Dog Leads and Kennel
 Chains 45¢ @ 50¢5
 Wire Goods, Co.:
 Dog Chain, \$2.00 70¢
 Universal Dbl.-Jointed Chain, 50¢10¢

Chain and Ribbon, Sash—

Oneida Community:
 Steel Chain 60¢
 Pullman:
 Bronze Chain, 60%; Steel Chain,
 Coppered 60¢10¢
 Sash Chain Attachments, per set, 8¢
 Aluminum Sash Ribbon, per 100
 ft. \$2.00 @ \$3.00
 Sash Ribbon Attachments, per set, 8¢

Chalk—

Carpenters' Blue, \$5.00 @ 55¢
 Carpenters' Red, \$5.00 @ 55¢
 Carpenters' White, \$5.00 @ 15¢

Checks, Door—

Bardley's 33 1/4 %
 Reading, Ogden 20¢5
 Pullman, per gro. \$4.00
 Russwin 35 1/4 %

Chests, Tool—

American Tool Chest Co.:
 Boys' Chests, with Tools, \$4.00
 Youths' Chests, with Tools, \$4.00
 Gentlemen's Chests, with Tools, 30¢
 Farmers', Carpenters', etc., Chests,
 with Tools 20¢
 Machinists' and Pipe Fitters'
 Chests, Empty 45¢
 Tool Cabinets, \$4.00 45¢
 C. E. Jennings & Co.'s Machinists'
 Tool Chests 7 1/4 %

Chisels—**Socket Framing and Firmer**

Standard List 80¢10 @ 10¢
 Buck Bros. 30%
 C. E. Jennings & Co.:
 Socket Firmer No. 10 25¢7 1/2 %
 Socket Framing No. 15 25¢7 1/2 %
 R. & E. Mfg. Co. 70¢10 @ 10¢
 Swan's 60¢70 %
 L. & I. J. White & Co. 30¢30 @ 5¢

Tanged—

Tanged Firmers 35¢10 @ 40¢
 Buck Bros. 30%
 C. E. Jennings & Co. Nos. 131, 181, 25
 R. & E. Mfg. Co. 25¢30 @ 5¢
 L. & I. J. White Co. 25¢5 %

Box—

Elmore Tool Mfg. Co. 50%

Cold—

Id. Cold Chisels, good quality, 13¢15¢
 Cold Chisels, fair quality, 11¢12¢
 Cold Chisels, ordinary, 9¢10¢
 Elmore Tool Mfg. Co.:
 Cold Chisels 50¢5 %

Chucks—

Almond Drill Chucks 35%
 Almond Turret Six-Tool Chuck, 40%
 Beach Pat, each \$8.00 35¢5 %
 Cincinnati Chuck Co.:
 Independent 4-Jaw Reversible 35%
 Jacobs' Drill Chucks 35%
 Skinner Lathe Chucks 35%
 Universal, Reversible Jaws, 35%
 Universal, Com. Style Jaws, 40%
 Combination, Reversible Jaws, 35%
 Combination, Com. Style Jaws, 40%
 Round Body or Box Body, 2 Chuck
 Jaws 25%
 Geared Scroll Chucks 25%
 Drill Chucks:
 New Model, 25%; Geared Pat-
 tern, 25%; Skinner Patent, 25%
 Positive Drive 20%
 Planer Chucks 45%
 Standard 45%
 Drill Press Vises 30%
 Face Plate Jaws, 35%
 Standard Tool Co.:
 Improved Drill Chuck 45%
 Union Mfg. Co.:
 Combination, Nos. 1, 2, 3, 4, 5, 6,
 7, 8 and 17, 40%; No. 21, 35%
 Scroll Combinations, Nos. 83 and
 84 30%
 Geared Scroll, Nos. 33, 34 and 35, 25%
 Independent Iron, Nos. 18 and 318, 35%
 Independent Steel, Nos. 61, 62, 63, 25%
 Union Drill, Nos. 000, 00, 100, 101,
 102, 103, 104 35%
 Union Czar Drill 25%
 Union Geared Drill Chuck 25%
 Universal, 11, 12, 16, 17, 13, 14, 15, 40%
 Universal No. 42 35%
 Iron Face Plate Jaws, Nos. 28, 30,
 48 and 50 35%
 Steel Face Plate Jaws, Nos. 70 and
 72 30%
 Westcott Patent Chucks:
 Lathe Chucks 50%
 Little Giant Auxiliary Drill 50%
 Little Giant Double Grip Drill 50%
 Little Giant Drill, Improved 50%
 Oneida Drill 50%
 Scroll Combination Lathe 50%

Clamps—

Carriage Makers', Star, P., S. & W.,
 Co. 50¢50 @ 55¢
 Bealy, Parallel 33 1/4 %10¢
 Hammer & Co.:
 Adjustable 20¢5 %
 Carriage Makers' H. P. Screw, 40¢5 %
 Myers', Standard and Wenzelmann
 Hay Rack 50%
 Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain,

Iwan's Champion, Adjustable 50%
 Iwan's Champion, Stationary, 40¢5 %

Cleavers, Butchers'—

Poster Bros. 30%
 L. & I. J. White Co. 30%

Clippers, Horse and**Sheep—**

Chicago Flexible Shaft Co.:
 1902 Chicago Horse, each, \$10.75
 20th Century Horse, each, \$5.00
 Lightning Belt Horse, each, \$15.00
 Chicago Belt Horse, each, \$20.00
 Stewart's Enclosed Gear Ball
 Bearing Horse, each, \$7.50
 Stewart's New Model Sheep
 Shearing Machine, each, \$12.75
 Stewart Enclosed Gear Shear-
 ing Machine, No. 8, each, \$9.75

Clips, Axle—

Regular Styles 80¢80 @ 10%

Cocks, Brass—

Hardware list:
 Plain Bibbs, Globe, Kerosene,
 Racking, Liquor, Bottling,
 &c 75%
 Compression Bibbs 75%

Compasses, Dividers, &c.

Ordinary Goods 75¢75 @ 5%

Conductor Pipe,—

All territories, L. C. L.
 Galvanized Steel, 75¢10¢5 @ 10¢
 Charcoal 50¢10¢7 1/2 @ 10¢
 Copper 50¢10¢10 @ 10¢
 Terms, 60 days; 2¢ cash 10 days. Fac-
 tory shipments generally delivered.
 See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:
 Galvanized, Lined, side handles,
 Gal 2 3 4 5 8
 Each \$1.30 1.60 2.30 3.00
 White Enamelled Lined, Side
 Handles:
 Gal 2 3 4 6 8
 Each \$2.40 2.80 3.50 4.50 5.60
 Agate Lined, Side Handles:
 Gal 2 3 4 6 8
 Each \$3.00 3.10 4.30 5.30 6.60

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair
 and heavier, 21¢; lighter than
 3 lb. to pair 23¢

Cord—**Sash—**

Braided, Drab 1b. 35¢
 Braided, White, Com., Nos. 8
 to 12, 25¢; No. 7, 25 1/2¢; No.
 6, 26¢.
 Cable Laid Italian, 1b., No. 18, 37¢
 Italian, 1b., A, No. 18, 25¢; B, 22¢
 Common India 1b. 11¢11 1/2 @
 Cotton Sash Cord, Twisted, 18¢20¢
 Patent Russia 1b. 20¢
 Cable Laid Russia 1b. 21¢
 India Hemp, Br'd'd 1b. 21¢
 India Hemp, Twisted, 1b. 13¢14¢
 Patent India, Twisted, 1b. 17¢
 Eldystone Braided, Nos. 8 to 12,
 26¢; 7, 26 1/2¢; 6, 27 1/2¢
 Harmony Cable Laid Italian, Nos. 7
 to 10 1b. 23¢
 Pullman:
 Wire Sash Cord 10¢
 Sash Cord Attachments, per 100, \$2.00
 Samson, Nos. 8 to 12:
 Braided, 1b., Drab Cotton,
 55¢; Italian Hemp, 40¢ @
 50¢; Linen, 65¢; White Cot-
 ton, 50¢; Spot Cord, 50¢
 Massachusetts, White, 1b. 40¢
 Massachusetts, Drab, 1b. 45¢
 Phoenix, White, Nos. 8 to 12 27¢
 Silver Lake, per lb.:
 A, Drab, 45¢; A, White, 40¢;
 B, Drab, 40¢; B, White, 35¢;
 Italian Hemp, 40¢; Linen, 57 1/2¢
 See also Chain and Ribbon.

Wire, Picture—

Full Length 90¢10 @ 10¢
 Short Length 90¢20 @ 10¢
 Hendryx Standard Wire Picture Cord,
 90¢10¢
 Turner & Stanton Co. Wire Picture
 Cord 90¢10¢

Cradles—

Grain 50%

Crayons—

White Round Crayons, Cases, 100
 gro., \$8.00, \$8.50, \$9.00 and \$10.00
 according to grade.

Zelnicker's Lumber: \$ gro.
 White and Purple, Indelible \$7.50
 Blue, Red, Green, Yellow and
 Terra Cotta, \$6.50; Black \$1.50
 Giant Lumber, 5 1/4 in. x 15-18 in.,
 round, all colors, \$12.00; Indel-
 ible, \$11.00; Blacks, \$10.00
 Genuine Soapstone, Metal Workers',
 5 in. x 1 1/4 in. Round, \$2.50; 5 in. x
 1 1/4 in. Square, \$1.75; 5 x 1 1/2 x 3-16,
 \$2.50; 5 x 1 1/4 x 3-16 \$3.00
 Suremark, Black, \$2.25; Blue, Red
 and Yellow \$2.50

Cutlery, Table—

International Silver Company:
 No. 12 M'd'm Knives, 1817, 19 doz. \$3.50
 Star, Eagle, Rogers & Hamilton
 and Anchor 19 doz. \$3.00
 Wm. Rogers & Son 19 doz. \$2.50

Cutters— Glass—

H. H. Mayhew Co. 40¢5 %

Meat and Food—

Enterprise:
 Nos. 5 10 12 22 32
 Each \$1.75 \$2.50 \$2.25 \$4 \$5 25¢25 1/2 %
 No. 202, \$1.50 40¢7 1/2 %
 P. S. & W. Co.:
 Ideal 10¢10¢5 %
 Hales 60¢5 %
 Little Giant 10¢40 @ 50¢
 Nos. 305 310 312 320 322
 \$35.00 \$18.00 \$14.00 \$72.00 \$68.00
 New Triumph No. 605, 19 doz. \$24.00,
 Russwin Food, No. 1, \$24.00; No. 2,
 \$27.00; 3, \$12.00 45¢10¢10¢
 \$15.00 \$18.00

Slaw and Kraut—

Henry Disston & Sons:
 Slaw and Kraut Cutters 35%
 Corn Graters 30%
 J. M. Mast Mfg. Co.:
 Slaw Cutters, 1 Knife, 19 doz. \$3.00
 Combined Slaw Cutter and Corn
 Grater 19 doz. \$4.00

Tobacco—

Enterprise 25¢30 %

Diggers, Post Hole, &c—

Disston's:
 Rapid, 19 doz., \$24.00 25%
 Samson, 19 doz., \$31.00 25%
 Iwan's Pat. Post Hole and Well
 Auger 40%
 Vaughan Pattern Post Hole Augers,
 4 to 9 in. 19 doz. \$6.25
 Perfection Post Hole Diggers, 19
 doz. \$2.25

Split Handle Post Hole Diggers,
 Hercules Pattern, 19 doz., \$7.25
 Kohler's, 19 doz., Universal, \$14.00;
 Little Giant, \$12.00; Genuine Her-
 cules, \$10.00; Invincible, \$9.00;
 Rival, \$8.50; Pioneer, \$7.50
 Never-Break Crucible Steel Post
 Hole Diggers 60%

Dressers Emery Wheel—

Sterling Emery Wheel Dressers 35%
 Sterling Wheel Dresser Cutters 35%

Drills and Drill Stocks—

Blacksmith's Common Drilling
 Machines \$1.50 @ 1.75
 Breast, Millers Falls 15¢10 %
 Breast, P., S. & W. 30¢10 %
 C. & C. Ratchet 25%
 Reversible Ratchet Die Stocks, 25%
 Forbes Die Stocks, \$10.00 @ 10¢
 Goodell Automatic Drills, 30¢10¢10 %
 Millers Falls Automatic Drills,
 Graves', per doz., Nos. 1, \$4.86;
 2, \$8.16
 Millers Falls Automatic Drills, 33 1/4 %10 %
 Noyes Repair Shop Drill No. 10, 20¢
 Ratchet, Parker's 40%
 Ratchet, Weston's, Styles A and B, 50%
 Ratchet, Weston's, Styles C, D and
 F 45%
 Ratchet, Weston's, Style H, Im-
 proved 45%
 Ratchet, No. 912 50%
 Ratchet, Celebrated 50%
 Ratchet, Whitney's, P., S. & W. 50%
 Star Drills 60%
 Star Pipe Drills 50¢10 %
 Sebeco Extension Drills 40¢10¢5 %
 Star Drill Holders 50¢10¢10 %
 Star Drill Points 50¢10¢10 %

Twist Drills—

Bit Stock 70¢70 @ 10%
 Taper and Straight Shank
 65¢65 @ 10%

Drivers, Screw—

Buck Bros.' Screw Driver Bits 30%
 Disston's Screw Drivers, Handles
 and Ferrules 70%
 Elmore Tool Mfg. Co.:
 Elmore 60%
 Hartford 55¢10 %
 Indestructible 55¢10 %
 Standard Neverturn 60%
 Star 75¢5 %
 Screw Driver Bits 25%
 Fray's Hol. H'dle-Sets, No. 3, \$12.50
 Ford's Brace Screw Drivers 40¢10 %
 Gay's Double Action Ratchet 35%
 Goodell's Auto 65¢10 %
 Mayhew's Black Handle 45%
 Mayhew's Monarch 45%
 Millers Falls, 19 doz., Nos. 11, \$9.95;
 12, \$13.73; 20, \$8.17; 21, \$8.46; 41,
 \$13.43; 42, \$17.21.
 Swan's:
 Nos. 7565 to 7568, 60%; No. 7540
 40¢10 %

Eave Trough, Galvanized—

All territories.
 Galvanized Steel 80¢10¢10¢ @ 10¢
 Copper 50¢10¢10¢ @ 10¢
 Terms.—2¢ for cash. Factory shipments
 generally delivered.
 See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
 Galv. Steel, Galv. C. I. and
 Copper.
 Sizes 2, 3, 4 30%
 Sizes 1 1/2, 2 1/2, 3 1/2, 5, 6 60¢10 %
 No. 26 50%
 No. 24 25%
 Copper Elbows 50%

Emery, Turkish—

4 to 5 1/2 to
 46: 220: Flour.
 Kegs 1b. 5¢ 5 1/4¢ 3 1/4¢
 1/2 Kegs 1b. 5 1/4¢ 5 1/4¢ 3 1/4¢
 1/4 Kegs 1b. 5 1/4¢ 6¢ 4¢
 10-lb. cans,
 10 in case, 6 1/4¢ 7¢ 6¢
 10-lb. cans, less
 than 10 10¢ 10¢ 8¢
 Less quantiti. 10¢ 10¢ 8¢
 NOTE.—In lots 1 to 3 tons a discount of
 10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions 40¢10 %

Extinguishers—Fire

Royal Mfg. Co. Fire, 19 doz. \$12.00 50%

Fasteners, Blind—

Upson's Patent 25%
 Walling's 50%
 Zimmermann's Jap'd and Galv. 65%
 Bronze and Plated 50%

Cord and Weight—

Ives, 19 gro., \$1.08 25%
 Titan, 19 gro., \$0.66 25%

Corrugated—

Acme Corrugated Fasteners.....70%

Faucets—

Cork Lined.....50¢10¢60%
Metallic Key, Leather Lined.....
60¢10¢70%
Red Cedar.....40¢5¢10¢10¢5%
Petroleum.....70¢10¢75%

John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.....50%
John Sommer's Duplex Metal Key.....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. K. L. Cork Lined.....50%
John Sommer's Reliable Cork Lined.....50%
John Sommer's Chicago Cork Lined.....60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cedar.....50%
John Sommer's Perfection, Cedar.....40%

Self Measuring:
Enterprise, Self Measuring and
Pump, 3/4 doz., \$36.00.....40¢10%
Lane's, 3/4 doz., \$36.00.....40¢10%

Files— Domestic—

Best Brands.....70¢10¢75¢10%
Standard Brands.....75¢10¢80%
Lower Grade.....75¢10¢10¢80%
Diaton's Superfine.....60%
Fitchburg.....80%
Heller Bros.....70¢10¢75¢10%
Liveright Bros., Gold Medal.....70%
McCaffrey's American Standard.....60%10¢10%
McCaffrey's Swiss Pattern.....45¢10%
Simonds.....70%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103; Special, No.
104.....\$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60¢10%

Grindstone—

Net Prices:
Inch.....15 17 19 21
Per doz.....\$3.00 3.25 3.55 4.00
Peck, Stow & Wilcox Co.:
In.....15 17 19 21 25
\$4.00 4.10 4.75 5.50 6.00.....20%
Reading Hardware Co.....50¢10%

Frames— Wood Saw—

White, S'g't Bar, per doz.80¢1.00
Red, S'g't Bar, per doz.1.00¢1.25
Red, Dbl. Brace, per doz.1.40¢1.50

Freezers, Ice Cream—

Qt.....1 2 3 4 6
Each.....\$1.25 \$1.60 \$1.90 \$2.20 \$2.50

Fuse— Per 1000 Feet.

Hemp.....\$3.75 }
Cotton.....3.20 }
Waterproof Sgl. Taped.....3.65 }
Waterproof Dbl. Taped.....4.40 }
Waterproof Tpl. Taped.....5.15 }

Gates, Molasses and Oil—

Stebbins' Pattern.....80¢80¢5%

Gauges—

Marking, Mortise, &c.....50¢50¢10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50¢50¢10%
Diaton's Marking, Mortise, &c.....50¢10%
Wire, Brown & Sharpe's.....33%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....25%

Gimlets— Single Cut—

Numbered assort-
ments, per gro.
Nail, Metal, No. 1, \$2.00; 2, \$2.30
Spike, Metal, No. 1, \$1.00; 2, \$1.30
Nail, Wood Handled, No. 1,
\$2.50; 2, \$2.60
Spike, Wood Handled, No. 1,
\$1.50; 2, \$1.60

Glasses, Level—

Chapin-Stephens Co.....65¢65¢10%
Diaton & Sons.....60¢10%

Glue, Liquid Fish—

Bottles or Cans, with Brush,
25¢10¢50%

Grease, Axle—

Common Grade.....gro. \$6.00¢\$6.50
Dixon's Everlasting, 10-lb. pails, ea.
85¢; in boxes, 3/4 doz., 1 lb., \$1.20;
2 lb., \$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33%¢33%¢10%

Grinders—

Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos.
1, 2, 3; Pyko Primo; Pyko Peer-
less; Pyko Spiral (foot power).....33%
Mower Knife and Tool, \$5.00.....40¢10%

Royal Mfg. Co.:

Hand Power, each, Nos. 01, \$1.75;
02, \$2.25; 1A, \$2.50; 1B, \$3.25.....33%
Foot Power, No. 10, \$5.00.....33%
Encased Gears, No. 15, Hand
Power, \$13.50; Combined Hand
and Foot Power, \$15.00.....33%
Lawn Mower Grinder, No. 40,
\$3.75.....33%
Sickle Grinder, each, No. 2,
\$5.00.....33%
Cast or Cut Gears.....33%

Grindstones—

Pike Mfg. Co.:
Improved Family Grindstones, 3/4
inch, 3/4 doz., \$2.00.....33%
Richards Mfg. Co., Eli and Cycle
Ball Bearing, mounted.....40%

Grips, Nipple—

Perfect Nipple Grips.....40¢10¢2%

Halters and Ties—

Cow Ties.....70¢10¢—%
Bridgeport Chain Co.:
Triumph Coil and Halters, 35¢2 1/2¢40%
Brown Coil and Halters.....45¢50¢5%
Brown Cow Ties.....50¢50¢10¢5%
Brown Tie Outs.....70¢10¢75¢5%
Covert Mfg. Co.:
Web.....30¢10%
Jute Rope.....55%
Sisal Rope.....55%
Cotton Rope.....55%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40¢40¢5%
Am. Cow Ties.....45¢50%
Niagara Coil and Halters.....45¢50¢5%
Niagara Cow Ties.....45¢50¢10¢5%

Hammers—

Handled Hammers—

Heller's Machinists'.....65¢10¢65¢10¢10%
Heller's Farriers'.....10¢40¢10%
Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers'.....50%
Riveting.....50%
Machinists'.....50%
Blacksmiths'.....50%
Elmore Shoemaker's Hammers.....75%
Victor Magnetic Tack, 3/4 gro.....\$7.75

Heavy Hammers and Sledges—

Under 5 lb., per lb., 50¢.....80¢10%
5 to 10 lb., per lb., 40¢.....80¢10%
Over 10 lb., per lb., 30¢.....80¢10%
Over 5 lb., per lb., 30¢.....80¢10%

Handles—

Agricultural Tool Handles

Axe, Pick, &c.....60¢10¢60¢10¢5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....35%
Diaton's Handles and Saw Tabs.....45%

Mechanics' Tool Handles—

Auger, assorted.....gro. \$3.00¢\$3.50
Brad Axl.....gro. \$1.65¢\$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, \$2.40¢
\$2.65; Hickory.....\$2.15¢\$2.40
Socket Firming, Apple, \$1.75¢
\$1.95; Hickory.....\$1.40¢\$1.75
Socket Framing, Hickory.....\$1.60¢\$1.75
File, assorted.....gro. \$1.30¢\$1.40
Hammer, Hatchet &c.....60¢10¢60¢10%
Hand Saw, Varnished, doz., 80¢;
Not Varnished.....70¢10%
Plane Handles:
Jack, doz., 25¢; Fore, doz., 45¢
Chapin-Stephens Co.:
Carving Tool.....30¢30¢10%
Chisel.....60¢60¢10%
File and Awl.....60¢60¢10%
Saw and Plane.....30¢30¢10%
Screw Driver.....30¢30¢10%
Millers Falls Adj. and Ratchet Auger
Handles.....15¢10%
Nicholson Simplicity File Handle.....
3/4 gro. \$0.85¢\$1.50

J. L. Osgood:

Indestructible File and Tool, 3/4
gro., No. 1, \$3.00; No. 2, \$3.50;
No. 3, \$9.00; No. 4, \$9.50; No.
5, \$10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:

Hammer, 3/4 doz., 12 in., \$2.00;
14 in., \$2.00; 16 in., \$2.30; 18
in., \$2.50; 20 in., \$2.70; 22 in.,
\$3.00; 24 in., \$3.30; 26 in., \$3.50;
30 in., \$3.80
Sledge, 3/4 doz., oval, 30 in.,
\$3.80; octagon, 30 in., \$3.80;
oval, 36 in., \$4.00; octagon,
36 in., \$4.00
Axe, 3/4 doz., 28 to 34 in., \$5.60;
36 in., \$5.80
Adze, 3/4 doz., 36 in., \$5.80; 36
in., \$7.80
Pick, 3/4 doz., R. R., 36 in.,
\$8.00; coal, 34 in., \$5.80
Hatchet, 3/4 doz., 12 to 14 in.,
\$2.00

Hangers—

NOTE.—Barn Door Hangers are gen-
erally quoted per pair, without track
and Parlor Door Hangers per double set
with track, &c.

Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Elevator.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Clark's O. P., Nos. 1.....75¢5%
Clark's O. P., Nos. 3 and 5.....75¢5%
Tip Pat'n, No. 1.....75¢10%
Clark's No. 3.....75¢5%
Buffalo Gravity Locking, Nos. 1,
3 & 5.....70¢10¢5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75%
Pioneer.....75%
Empire.....65%
W. H. Co.'s Mortise Gravity Lock-
ing, No. 2.....60¢10%

Lane Bros. Co.:
Parlor, Ball Bearing, \$4.00;
Standard, \$3.15; No. 105, \$2.85;
New Model, \$2.80; New Cham-
pion per set of 4 Hangers, com-
plete with track.....\$2.25
Barn Door, Standard.....60¢10%
Hinged.....net \$6.08
Covered.....60¢5%
Special.....70¢5%
Trolley Hangers and track.....50%
Lawrence Bros.:
Cleveland.....70¢7 1/2%
Clipper, No. 75.....60%
Crown.....55¢10%
Cyclone, No. 40.....net \$6.50
Tandem, No. 50.....net \$7.50
Seal, Steel Track No. 32.....55¢10%
Trolley, No. 30, 3/4 pair.....\$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2, 70%
Anti-Friction.....60%
Hinged Hangers, King Charm, 60%
F. E. Myers & Bro., Stayon;
Seal, O. K. Adjustable; Sure
Grip; Sure Grip Adjustable;
Sure Grip Tandem; Sure Grip
Tandem Adjustable; Tandem
Adjustable.....60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247,
60¢5%
Pioneer Wood Track, No. 3, \$2.25
Roller B'r'g St'l Track No. 12, \$2.20
Roller B'r'g St'l Track No. 13, \$2.50
Roller B'r'g, Nos. 39, 41, 43,
70¢7 1/2%
Hero, Adj. Track No. 19, 50¢10%
Adjustable Track Tandem Trol-
ley Track No. 16.....50¢10%
Seal, Steel Track No. 32.....\$2.25
Auto Adj. Track No. 32, 50¢5%
Trolley B. D. No. 17, \$1.25; F.
D. No. 120, \$2.25; No. 121,
\$2.45; No. 150.....\$2.50
Safety Underwriters F. D. No.
101.....50%
Tandem N. 4, 2 1/2 and 3 1/2 60¢10%
Palace, Adjustable Track No.
132.....50¢5%
Royal, Adjustable Track No.
122.....50¢10%
Ives' Wood Track No. 1.....\$2.25
Trolley B. D. No. 20.....50¢10%
Trolley B. D. No. 24, \$1.30; No.
27, \$1.40; No. 28, \$1.60
Roller Bearings, Nos. 37, 38, 39,
41, 43, 44, Sizes 1 and 2, 70¢7 1/2%
Anti-Friction, No. 42; No. 44,
Sizes 2 1/2 and 3.....60%
Hinged Tandem No. 48.....60¢5%
Folding Door B. B. Swivel No.
133.....40%

Extra 5¢10% often given.

Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247,
60¢5%
Pioneer Wood Track, No. 3, \$2.25
Roller B'r'g St'l Track No. 12, \$2.20
Roller B'r'g St'l Track No. 13, \$2.50
Roller B'r'g, Nos. 39, 41, 43,
70¢7 1/2%
Hero, Adj. Track No. 19, 50¢10%
Adjustable Track Tandem Trol-
ley Track No. 16.....50¢10%
Seal, Steel Track No. 32.....\$2.25
Auto Adj. Track No. 32, 50¢5%
Trolley B. D. No. 17, \$1.25; F.
D. No. 120, \$2.25; No. 121,
\$2.45; No. 150.....\$2.50
Safety Underwriters F. D. No.
101.....50%
Tandem N. 4, 2 1/2 and 3 1/2 60¢10%
Palace, Adjustable Track No.
132.....50¢5%
Royal, Adjustable Track No.
122.....50¢10%
Ives' Wood Track No. 1.....\$2.25
Trolley B. D. No. 20.....50¢10%
Trolley B. D. No. 24, \$1.30; No.
27, \$1.40; No. 28, \$1.60
Roller Bearings, Nos. 37, 38, 39,
41, 43, 44, Sizes 1 and 2, 70¢7 1/2%
Anti-Friction, No. 42; No. 44,
Sizes 2 1/2 and 3.....60%
Hinged Tandem No. 48.....60¢5%
Folding Door B. B. Swivel No.
133.....40%

Hangers— Garment—

Pullman Trouser, 3/4 gro., No. 1
\$9.00; No. 4, \$24.00; No. 5, \$16.50;
No. 8, Black Enamel, \$7.50; No. 10,
\$21.00; No. 12, \$8.00; No. 15, Rods,
\$9.00; No. 18, Loops.....\$10.00
Victor Folding.....3/4 gro. \$9.60

Joist and Timber—

Lane Bros. Co.....33%

Hasps—

Griffin's Security Hasp.....50¢10%
McKinney's Perfect Hasp, 3/4 doz., 60%

Hatchets—

Regular list, first qual.50¢10¢60%
Second quality.....60¢60¢10%

Heaters, Carriage—

Clark No. 5, \$1.25; No. 5R, \$1.50; No.
3, \$1.75; No. 3D, \$2.00; No. 1,
\$3.00.....25%
Big Hit Assortment, 3/4 case.....\$13.80
Leader, 3/4 case.....\$9.00
Clark Coal, doz.....\$0.75
A B C Coal, doz.....\$0.60
Sadtrom Coal, box 50 pieces.....\$0.75

Hinges—

Blind and Shutter Hinges

Surface Gravity Locking Blind:
Doz. Sets with Fastenings, No.
1, \$0.70; No. 3, \$1.25; No. 5,
\$1.50

Mortise Shutter.....80%
Mortise Reversible Shutter.....80%
North's Automatic Blind Fixtures,
No. 2, for Wood, \$3.00; No. 3, for
Brick, \$11.50.....10%
Charles Parker Co.....70¢75%
Parker Wire Goods Co.
Hinge & Benjamin Automatic Blind
Hinges.....20%
Hale's Blind Awning Hinges, No.
110, for wood, \$9.00; No. 111, for
brick, \$9.00.....20%

Reading's Gravity.....50¢10%
Stanley's Steel Gravity Blind Hinges,
No. 1647 1/2, 3/4 doz. sets, with
screws, \$1.00; with screws, \$1.30

Wrightsville Hardware Co.:

O. E., Lull & Porter.....75¢5%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65,
55.....75¢5%
Niagara Gravity Locking, Nos. 1,
3 & 5.....75¢5%
Clark's O. P., No. 1.....75¢10%
Clark's O. P., Nos. 3 and 5.....75¢5%
Tip Pat'n, No. 1.....75¢10%
Clark's No. 3.....75¢5%
Buffalo Gravity Locking, Nos. 1,
3 & 5.....70¢10¢5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75%
Pioneer.....75%
Empire.....65%
W. H. Co.'s Mortise Gravity Lock-
ing, No. 2.....60¢10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:
No. 1 2 3
Hinges with L'tchs.\$2.00 2.70 5.00
Hinges only.....1.25 1.90 3.50
Latches only......70 .75 .35

New England:

With Latch.....doz. \$2.00
Without Latch.....doz. \$1.60

Reversible Self-Closing:

With Latch.....doz. \$1.75
Without Latch.....doz. \$1.35

Western:

With Latch.....doz. \$1.75
Without Latch.....doz. \$1.15

Wrightsville Hardware Co.:

Shepard's or Clark's Hinges and
Latches, Hinges only or Latches
only, Nos. 1, 2 or 3.....70%

Miscellaneous—

Griffin Mfg. Co., Fleur de Lis Sur-
face Hinges, 3/4 doz. prs.....\$1.00

Pivot Hinges—

Bommer Bros. Pivot, Ball Bear-
ing.....40%
Lawson Mfg. Co., Matchless.....50¢10%

Spring Hinges—

Holdback, Cast Iron.....\$6.75¢\$7.00
Non-Holdback, Cast Iron\$6.50¢\$6.75

J. Bardsley:

Simplex Spring Hinges.....40%
Bardsley's Patent Checking, 33%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bear-
ing.....40%
Mortise Floor, Ball Bearing.....40%
Lavatory Hinges.....40%
Non-Holdback Screen Door,
Nos. 2000 and 900.....40%
Holdback Screen Door, No.
900.....\$9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triplex Spring Hinges.....50%
Chicago (Ball Bearing) Floor.....50%
Chicago Engine House.....25%
Lavatory Door Hinges.....50%
Adjustable Screen Door.....60%
Non-Holdback.....60%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30¢10¢10%
Matchless Jamb Hinges.....30¢10¢10%
Lavatory.....50¢10%
Surface Floor, Ball Bear-
ing.....60¢10%
Richards Mfg. Co.:
Superior Double Acting Floor
Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback
Screen Door.....\$9.00
Chief Ball Bearings Floor
Hinge.....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdbk.
3/4 gr. pr.....\$9.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....40%
Spring Hinges.....40%

Wrought Iron Hinges—

Strap and T Hinges, &c.:
Light Strap Hinges.....65%
Heavy Strap Hinges.....75%
Light T Hinges.....60%
Heavy T Hinges.....40¢10%
Extra Heavy T Hinges.65¢10%
Hinge Hasps.....40%
Cor. Heavy Strap.....75%
Cor. Ex. Heavy T.....65¢10%
Screw Hook 6 to 12 in. 1b. 3 1/2¢
and Strap 1 1/2 to 20 in. 1b. 3 1/4¢
22 to 36 in. 1b. 3 ¢
Screw Hook and Eye:
3/4 to 1 inch.....1b. 5 1/2¢
1 1/2-inch.....1b. 6 1/2¢
1 1/2-inch.....1b. 8 1/2¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.30¢10%

Hods— Coal—

Net, per dozen.

Inch. 15 16 17 18

Galv., open.....\$2.15 2.40 2.55 2.80

Jap., open.....1.65 1.75 1.90 2.30

Galv., funnel.....2.00 2.15 2.40 3.35

Jap., funnel.....2.00 2.15 2.40 2.60

Extra 10% often given on most of these Hinges.

Masons' Etc.

Cleveland Wire Spring Co.:
Steel Brick, No. 182.....each \$1.05
Steel Mortar, No. 188.....each \$1.35

Hoes— Eye—

Scovill and Oval Pattern,
60¢ 10¢ 60¢ 10¢ 10¢
Grub, list Feb. 23, 1899,
70¢ 10¢ 70¢ 10¢ 10¢
D. & H. Scovill.....27 1/2%

Handled—

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit.....\$2.50

Holders— Bit—

Angular, 1/2 doz. \$21.00.....45¢ 10%

Broom—

Pullman Broom, 1/2 gro.....\$9.00

Door—

Bardsley's, Iron, 40%; Bronze.....20%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-
ready, 40%; Nos. 118, 119, Sure
Grip.....50%
Superior.....40%

File and Tool—

Nicholson File Holders and File
Handles.....33 1/2¢ 40%

Fruit Jar—

Triumph Fruit Jar Holder, 1/2 doz. \$2.00

Nipple—

Curtis Nipple Holders.....5%

Trace and Rein—

Fernald Double Trace Holder, 1/2 doz.
pairs.....\$1.25
Dash Rein Holder, 1/2 doz.....\$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty,
50%; German.....33 1/2%

Hooks—Cast—

Bird Cage, Reading.....50%
Clothes Line, Reading List.....50¢ 5%
Coat and Hat Iron, Reading.....50%
Coat and Hat, Bronze Metal, Read-
ing.....33 1/2%
Coat and Hat, Wrightsville.....60¢ 5%
Harness, Reading List.....50%

Wire—

Belt, Nos. 1 to 15.....80¢ 80¢ 45%
Wire C. & H. Hooks.....80¢ 80¢ 10%
Parker Wire Goods Co., King.....75¢ 10%
Wire Goods Co.:
Acme, 60¢ 10%; Chief, 75¢ 75¢ 10%
Crown, 75¢ 100¢ 80%; Czar, 70%; Cap-
itol, 80%; Czar Harness, 50¢ 10%;
Ceiling, 75¢ 80%.

Miscellaneous—

Hooks, Bench, see Stops, Bench.
Rush, Light, doz., \$6.20; Medium,
\$6.75; Heavy, \$7.65
Grass, best, all sizes, per doz.,
\$2.75¢ \$3.00
Grass, common grades, all sizes,
per doz.....\$1.25¢ \$1.50
Hooks and Eyes:
Brass.....60¢ 60¢ 10%
Malleable Iron.....70¢ 70¢ 10%
Covert Mfg. Co. Gate and Scuttle
Hooks.....25%
Turner & Stanton Co. Cup and
Shoulder.....85¢ 10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Hose, Rubber—

Garden Hose, 1/4-inch:
Competition.....ft. 6¢ 6 1/4¢
3-ply Guaranteed.....ft. 8 1/4¢ 9¢
4-ply Guaranteed.....ft. 9 1/4¢ 12¢
Cotton Garden, 1/4-in., coupled:
Low Grade.....ft. 8¢ 9¢
Fair Quality.....ft. 10¢ 11¢

Irons— Sad—

From 4 to 10.....17.2% 3¢ 4¢
Mrs. Porter's, cents per set:
Nos. 50 35 60 65
Jap'd Caps.....36 93 96 93
Tin'd Caps.....91 98 1.01 98

Bar and Corner—

Richards Mfg. Co., Bar, 60¢ 10%;
Corner.....60%

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30¢ 10%; Steel, 80%
Lane's Steel.....30¢ 5%
Richards' Tiger Steel, No. 130.....50¢ 10%

Ladder—

Richards Mfg. Co., Ladder Jacks.....50%

Jointers—

Pike Mfg. Co., Saw Jointers, \$7.00.....40%

Knives—**Butcher, Kitchen, &c.—**

Foster Bros.' Butcher, &c.....30%

Corn—

Columbian Cutlery Co., Wilcut
Brand Knives and Hooks.....60%

Drawing—

Standard List.....80¢ —%
C. E. Jennings & Co., Nos. 45, 46,
25¢ 7 1/2%
Jennings & Griffin, Nos. 41, 42,
66¢ 7 1/2%
Swan's.....66¢ 7 1/2%
L. & I. J. White.....20¢ 25%

Hay and Straw—

Serrated Edge, per doz. \$5.00¢ 5.50
Iwan's Sickle Edge.....1/2 doz. \$9.00
Iwan's Serrated.....1/2 doz. \$9.50

Miscellaneous—

Farriers'.....doz. \$2.60¢ 3.55

Knobs—

Base, 2 1/2-inch, Birch or Maple,
Rubber Tip.....gro. \$1.25¢ 1.40
Door, Mineral.....doz. 65¢ 70¢
Door, Por. Jap'd.....doz. 70¢ 75¢
Door, Por. Nickel.....doz. \$2.05¢ 2.15
Bardsley's Wood Door and Shutters.....10%

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders.....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladies, Melting—

L. & G. Mfg. Co.'s List, Melting and
Plumbers'.....25%
P. S. & W.....40¢ 10%
Reading.....50¢ 10%

Lamps—

Hammer's M. I. Hand.....45%

Lanterns—Tubular—

Regular, No. 0.....doz. \$4.00¢ 4.50
Side Lift, No. 0.....doz. \$4.25¢ 4.75
Hinge Globe, No. 0.....doz. \$4.25¢ 4.75
Other Styles.....40¢ 5%

Bull's Eye Police—

3-inch.....\$3.75¢ 4.00

Latches—Thumb—

Roggin's Latches, Jap'd, with
Screws.....doz. 35¢ 40¢

Door—

Cronk & Carrier Mfg. Co., No. 101,
1/2 doz. \$2.00
Richards' Bull Dog, Heavy, No.
125.....50¢ 5%
Richards' Trump, No. 127.....\$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.: Cotton, 55%; Hemp,
45%; Jute, 55%; Sisal, 45%.

Lifters, Transom—

Reading, Iron, 50¢ 5%; Bronze
Metal.....33 1/2%
R. & E.....19%

Lines—

Wire Clothes, Nos. 18 19 20
100 feet.....\$2.30 1.95 1.75
75 feet.....\$1.95 1.65 1.50
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3.....40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.
3, \$7.50.....1/2 gr. 30%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3 1/2, \$1.50; No. 4,
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
No. 4 1/2, \$4.50.....30%
Tent and Awning Lines: No. 5,
White Cotton, \$7.50; Drab Cotton,
\$3.50.....20%
Clothes Lines, White Cotton: 50 ft.,
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
100 ft., \$5.25.....30%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and
Awning Lines.....40%
Clothes Lines, White Cotton.....40%
Shade Cord, Cotton or Linen.....30%

Locks— Cabinet—

Cabinet Locks.....33 1/2¢ 33 1/2¢ 5%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made
on these goods.

Reading Hardware Co.....33 1/2%
R. & E. Mfg. Co.....19%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and
Brass.....75¢ 10%

Sash, &c.—

Ives' Patent:
Crescent.....25%
Automatic Gravity Metal Sash,
gro., \$149.58.....25%
Window Ventilating.....25%
Pullman Patent Ventilating Lock.....25%
Reading Sash Locks, Iron.....50%
Reading Sash Locks, Bronze Metal,
33 1/2%.

Machines—Boring—

Com. Upr't, without Augers,
\$2.00¢ 2.25
Com. Angl'r, without Augers,
\$2.25¢ 2.50
Ford Auger Bit Co.....\$22.00
Jennings' Nos. 1 and 4.....25¢ 7 1/2%
Millers' Falls.....5.75
Snell's, Upright, \$2.65; Angular, \$2.90
Swan's Improved.....40¢ 10%

Corking—

Reisinger Invincible Hand Power.....
1/2 doz. \$48.00

Forming, Bending, Etc—

Royal Forming, Bending, Crimp-
ing and Fluting, Hand Power,
each, \$20.00.....40%

Hoisting—

Moore's Anti-Friction Chain Hoist.....30%
Moore's Hand Hoist, with Lock
Brake.....20%
Moore's Cyclone High Speed Chain
Hoist.....25%

Ice Cutting—

Chandler's.....12 1/2%

Mallets—

Hickory.....45¢ 50¢
Lignumvita.....45¢ 50¢
Tinnors' Hickory and Apple-
wood.....doz. 45¢ 50%

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.....50%
Everlasting Flexible Steel.....40%

Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee.....20¢ 25%
Bone, Shell and Corn.....25¢ 10%
Parker's Columbia and Victoria.....33 1/2%
Parker's Box and Side.....50¢ 10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Pike Mfg. Co., Tool and Knife
Grinding.....33 1/2%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., \$2.00; advance
10¢ for each size.
Cheap, 10-in., \$2.25; advance 15¢
25¢ for each size.
Better Grade, 10-in., \$3.00; ad-
vance 25¢ for each size.
10 12 14 16 18-in.
High Grade.....\$4.50 4.75 5.00 5.25
Continental, High and Low Wheel,
50¢ 10%
Great American.....66% 10%
Great American Ball Bearing.....66% 10%
Quaker City.....66% 10%
Pennsylvania, High and Low Wheel,
50¢ 10%
Pennsylvania, Jr., Ball Bearing,
50¢ 5%
Pennsylvania Golf, 6 Knives, Low
Wheel, 33 1/2%; High Wheel.....45%
Pennsylvania Golf, Ball Bearing, 1
Knives, High Wheel.....33 1/2%
Pennsylvania Horse, 30 and 38 inch,
33 1/2% 45%
Pennsylvania Pony or Two Man.....40¢ 5%
Pennsylvania Grand Horse, 30 and
38 in.....33 1/2%

Nails—

Wire Nails and Brads, Miscel-
laneous.....85¢ 10%
Cut and Wire. See Trade Report.
Hungarian, Finishing, Upholster-
ers', &c. See Tacks.

Horse—

Jobbers' Special Brands,
per lb. 9¢

Picture—

Brass Hd. gro. 1/4 2 2 1/2 \$ in.
Por. Head, gro., all sizes.....80¢

Upholsters—

Brass.....30%
Plated.....30¢ 10%

Nuts— Blank or Tapped.

Cold Punched: Off list.
Square.....5.10¢ 5.20¢
Hexagon.....5.70¢ 5.80¢
Square, C. T. & R.....5.50¢ 5.60¢
Hexagon, C. T. & R.....5.30¢ 5.40¢
Hot Pressed: Off list.
Square.....5.50¢ 5.60¢
Hexagon.....5.95¢ 6.05¢

Oakum—

Best.....lb. 6 1/2¢
U. S. Navy.....lb. 6 ¢
Navy.....lb. 5 ¢
Plumbers' Spun Oakum.....2 1/2¢ 3 ¢

Oil—

Pike Mfg. Co., Stonoil.....40%

Oil Tanks—See Tanks, Oil.**Oilers—**

Steel, Copper Plated.....75¢ 10%
Chase or Paragon:
Brass and Copper.....50¢ 10%
Zinc.....65¢ 10¢ 70%
Railroad.....60¢ 10¢ 10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70¢ 70¢ 10%
Railroad Oilers, &c.....60¢ 60¢ 10%
Hero Fruit Jar Co.:
Spring Bottom Cans.....70¢ 70¢ 10%
Railroad Oilers, etc.....60¢ 60¢ 10%
Malleable, Hammers' Improved, Nos.
11, 12 and 13, 10%; Old Pattern,
Nos. 1, 2, 3, 4, 50%
Maple City Mfg. Co.:
Spring Bottom Cans.....70¢ 70¢ 10%
Railroad Oilers, &c.....60¢ 60¢ 10%

Openers, Can—

Triumph Shear Can Openers, doz., \$1.20

Egg—

Hartigan Nickel Plate, 1/2 doz., \$2.00;
Silver Plate, \$4.00.

Packing—

Asbestos Packing, Wick and
Rope, any quantity.....13¢

Rubber—

(Fair quality goods.)
Sheet, C. 1.....11¢ 12¢
Sheet, C. O. 8.....11¢ 12¢
Sheet, C. B. 8.....12¢ 13¢
Sheet, Pure Gum.....40¢ 45¢
Sheet, Red.....40¢ 50¢
Jenkins' 96, 1/2 lb. 80¢.....25%

Miscellaneous—

American Packing.....lb. 7¢ 10 ¢
Cotton Packing.....lb. 16¢ 25 ¢
Italian Packing.....lb. 9¢ 10 ¢
Jute.....lb. 4¢ 14 ¢
Russia Packing.....lb. 9¢ 10 ¢

Pails, Galvanized—

Net, per dozen.
Quarts.....8 10 12 14 16
Light.....\$1.45 1.65 1.80 2.00 2.35
Ez. heavy.....\$2.65 2.85 3.00 3.35
Rd. Bottom
Fire Pails.....1.95 2.10 2.30
Well Pails 1.95 2.15 2.35

Paint—

Dixon's Silica-Graphite, in 1 gal.
pails and 5 gal. kegs, 25%; pack-
ages of larger size.....20%

Pans— Dripping—

Standard List.....75¢ 10¢ 80%

Refrigerator, Galva.—

Inch.....12 14 16 18
Per doz.....\$1.75 2.25 2.80 3.15

Paper—Building Paper

Per roll.
Roan Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll.....38¢
Medium weight, 30 lbs. to roll.
Heavy weight, 40 lbs. to roll.....60¢
Black Water Proof Sheathing,
500 sq. ft., light weight, 65¢;
medium weight, 95¢; heavy
weight, \$1.30.
Draughting Felt, 9 and 6 sq. ft.
to lb., ton.....\$40.00
Red Rope Roofing, 250 sq. ft.
per roll.....\$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton,
carloads, \$31.00; less than
carloads.....\$32.00
2 ply, (roll 168 sq. ft.), 40 lb. 48¢
3 ply (roll 108 sq. ft.), 60 lb. 68¢
Slater's Felt (roll 500 sq. ft.),
per ton, \$35.00; per roll.....70¢

Sand Paper and Cloth—

Flint and Emery.....50¢ 10%
Garnet Paper and Cloth.....25%

Parers—Apple—

Goodell Co.,	
Family Bay State.....	doz. \$13.00
Improved Bay State.....	doz. \$36.00
New Lightning.....	doz. \$7.00
Turn Table.....	doz. \$4.00
White Mountain.....	doz. \$5.00
Bonanza Improved.....	each \$7.50
Dandy.....	each \$10.00
New Century.....	each \$20.00
Ranger.....	each \$25.00
Rapid Apple Silver.....	each \$100.00
Reading Hardware Co.,	
Advance.....	doz. \$1.00
Baldwin.....	doz. \$4.00
Reading 72.....	doz. \$3.25
Reading 75.....	doz. \$6.25

Orange—

Goodell Co., Success.....	each \$20.00
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Potato—

Saratoga.....	doz. \$7.00
White Mountain.....	doz. \$8.00

Picks and Mattocks—

List.....	75¢@10%
Cronk's Handled Garden Mattock,	doz., \$6.00.....33%

Pins, Escutcheon—

Brass.....	50¢@50¢@10%
Iron.....	60¢@60¢@10%

Pipe, Cast Iron Soil—

Eastern Prices:	
Standard, 2-6 in.....	68%
Extra Heavy, 2-6 in.....	74%
Fittings, Standard and	
Heavy.....	80%

Pipe, Merchant—

Carloads to Consumers:	
Steel.....	%
Iron.....	%
Bk. Galv. Bk. Galv.....	%
1/2 and 1/4 in.....	%
3/4 in.....	%
1 in.....	%
1 1/4 to 6 in.....	%
7 to 12 in.....	%

Pipe, Vitrified Sewer—

Carload lots.	
Standard Pipe and Fittings, 3	
to 2 1/2 in., f.o.b. factory:	
First-class.....	85%
Second-class.....	87%

Pipe, Stove—

Per 100 joints.	
C. L. L. C. L.	
Wheeling Corrugating Co., a Neated:	
5 in., Uniform Color.....	\$5.90
6 in., Uniform Color.....	6.90
7 in., Uniform Color.....	7.40
8 in., Uniform Color.....	8.40

Planes and Plane Irons—

Wood Planes—	
Bench, first qual.....	30¢@30¢@5%
Bench, second qual.....	40¢@40¢@5%
Molding.....	25¢@25¢@5%
Chapin-Stephens Co.,	
Bench, First Quality.....	30%
Bench, Second Quality.....	40%
Molding and Miscellaneous.....	25%
Toy and German.....	30%
Union.....	60%

Iron Planes—

Union.....	60%
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Plane Irons—

Wood Bench Plane Irons.....	25%
Buck Bros.....	30%
Chapin-Stephens Co.....	50%
Union.....	50%
L. & J. J. White.....	20¢@25¢@25%

Planters, Corn, Hand—

Kohler's Eclipse.....	doz. \$7.50
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Plates—

Felloc.....	1b. 3%@4%
Arery Stamping Co.,	
Standard Wrot. Steel Felloc Plates	
in 100 lb kegs, per 100 lb, 1/4-in.,	
1 1/4-in., \$4.00 net; 1 1/4-in. to 2-in.,	
inclusive, \$3.75 net.	

Steel Pipe Hook—

Never-Break.....	75¢@10%
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Pliers and Nippers—

Button Pliers.....	75¢@75¢@10%
Gas Burner, per doz., 5 in., \$1.25	
@ \$1.30; 6 in., \$1.35, \$1.50.	
Gas pipe.....	7 8 10 12-in.
\$2.00 \$2.85 \$2.75 \$3.50	
Acme Nippers.....	50%
Cronk & Carrier Mfg. Co.,	
American Button.....	80%
Improved Button.....	75¢@10%
Cronk's.....	60%
No. 99 Linemen.....	60%
Stub's Pattern.....	45%
Combination and others.....	35%
Elmore Tool Mfg. Co.,	
Gas Pliers.....	70%
Wire and Cutting Pliers.....	75%
Heller's Farriers' Nippers, Pliers	
and Tools.....	40¢@10¢@10%

P. S. & W. Tinner's Cutting Nip-	
pers.....	20%
Utica Drop Forge & Tool Co.,	
Pliers and Nippers, all kinds.....	40%

Plumbs and Levels—

Chapin-Stephens Co.,	
Plumbs and Levels.....	30¢@30¢@10%
Chapin's Imp. Brass Cor.....	40¢@40¢@10%
Pocket Levels.....	30¢@30¢@10%
Extension Sights.....	30¢@30¢@10%
Machinists' Levels.....	40¢@40¢@10%
Disston & Sons:	
Shafting Levels.....	60¢@10%
Pocket Levels.....	60¢@10%
Plumbs and Levels.....	60¢@10%
Track Level and Gauge.....	60¢@10%

Points, Glaziers'—

Bulk and 1-lb. papers.....	7b. 9¢
1/4-lb. papers.....	7b. 9¢
1/4-lb. papers.....	7b. 10¢

Police Goods—

Manufacturers' Lists.....	35¢@35¢@5%
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Polish—Metal, Etc—

Ladd Co.,	
Putzade Liquid, 1/2 gro., 1/4 pts.,	
\$12.00; 1 pts., \$20.00; 1 qts., \$40.00;	
1/2 doz., 1/2 gals., \$6.35; 1 gal., \$12.00.	
Prestoline Liquid, No. 1 (1/2 pt.),	
doz., \$3.00; No. 2 (1 qu.), \$9.00; 40%	
Prestoline Paste.....	40%
George William Hoffman:	
U. S. Metal Polish Paste, 3 oz.	
boxes, 1/2 doz., 50¢; 1 doz., \$4.50;	
1/2 lb boxes, 1/2 doz., \$1.25; 1 lb	
boxes, 1/2 doz., \$2.25.	
U. S. Liquid, 8 oz. cans, 1/2 doz.,	
\$1.25.	
Barkeepers' Friend Metal Polish, 1/2	
doz., \$1.75.	

Stove—

Black Eagle Benzine Paste, 5 lb cans,	
1/2 lb 10¢	
Black Eagle, Liquid, 1/2 pt. cans,	
1/2 doz. 75¢	
Black Jack Paste, 1/2 lb cans, 1/2 gr. \$3.00	
Black Kid Paste, 5 lb cans, each, \$0.65	
Ladd's Black Beauty Liquid, per	
100 tins.....	\$6.75
Joseph Dixon, 1/2 gr. \$5.75.....	10%
Dixon's Plumbago.....	1/2 lb 8¢
Fireside.....	1/2 gr. \$2.50
Gem, 1/2 gr. \$1.50.....	10%
Japanese.....	1/2 gr. \$3.50
Jet Black.....	1/2 gr. \$3.50
Peerless Iron Enamel, 10 oz. cans,	
1/2 doz., \$1.50	

Window Polish—

Benj. P. Forbes:	
Glasbright, 1 lb cans, each.....	75¢
Glasbright, Factory, 10 lb pails,	
1/2 lb.....	25¢

Poppers, Corn—

1 qt. Square.....	doz. \$0.80; gro. \$8.75
1 qt. Round.....	doz. \$0.90; gro. \$10.00
1 1/2 qt. Square.....	doz. \$1.20; gro. \$12.00
2 qt. Square.....	doz. \$1.50; gro. \$15.00

Pots, Glue—

Enameled.....	30¢@10%
Tinned.....	30¢@5%

Powder—

Black Sporting:	
Kegs (25 lb.).....	\$5.00@5.50
Half Kegs (12 1/2 lb.).....	2.75@3.00
Quarter Kegs (6 1/4 lb.).....	1.50@1.65
Canisters, pounds.....	.25
Canisters, 1/2 pounds.....	.15
Canisters, 1/4 pounds.....	.12

NOTE.—Prices vary according to territory.

Presses—

Enterprise Mfg. Co., Fruit, Wine	
and Jelly.....	20¢@25%
Lard Presses and Sausage Stuff-	
ers.....	25¢@25¢@7 1/2%

Seal Presses—

Morrill's No. 1, 1/2 doz., \$20.00.....	50%
Morrill's Pocket, \$20.00.....	50%

Pruning Hooks and Shears

See Shears.	
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Pullers, Nail, Etc.—

Elmore Tool Mfg. Co.,	
Drop Forged Tack Claws.....	50¢@10%
Standard Tack Claws, No. 10.....	33 1/4¢@7 1/2%
Nail Pullers.....	40%
Miller's Falls, No. 3, 1/2 doz.,	
33 1/4¢@10%	
Morrill's No. 1, Nail Puller, 1/2 doz.,	
\$20.00.....	50%
Pearson Spike Puller, each, \$15.00.....	25%
Parrot Tack and Stub Pullers, 1/2	
doz.....	\$1.30
The Scranton Co., Case Lots:	
No. 2B (large).....	\$3.50
No. 3B (small).....	\$3.00

Pulleys, Single Wheel—

Inch.....	1 1/2 1 3/4 2 3
Awning or Tackle,	
doz.....	\$0.80 .15 .80 1.05
Hay Fork, Steel or Solid Eye,	
doz., 4 in., \$1.25; 5 in., \$1.55	
Inch.....	2 2 1/2 3 1/2
Hot House, doz.....	\$0.65 .85 1.20
Inch.....	1 1/4 1 1/2 1 3/4 2

Screw, doz.....	\$0.16 .20 .25 .30
Inch.....	1 1/4 2 2 1/2 2 1/2
Side, doz.....	\$0.25 .40 .55 .60
Inch.....	1 1/4 1 1/2 2 1/2 2 1/2

Sash Pulleys—

Common Frame; Square or	
Round End, per doz., 1 1/4 and	
2 in.....	17¢@20¢
Auger Mortise, no Face Plate,	
per doz., 1 1/4 and 2 in.....	20¢@21¢
Acme, No. 35, 1 1/4 in., 1 1/2; 2 in., 20¢	
American Pulley Co.,	
Wrought Steel American Plain	
Wrought Steel, Eagle, 1/2 doz.,	
1 1/4 in., 17¢; 2 in., 20¢; 2 1/2	
in., 27¢	
Top Notch, Electrically Welded,	
Nos. 3 and 4, 1/2 doz.....	19¢
Common Sense.....	1/2 doz. 20¢
Merit, 1/2 doz., 2 1/4 in.....	37¢
Fox-All-Steel, Nos. 3 and 7, 2 in.,	
1 1/2 doz. 50%	
Grand Rapids All Steel Noiseless.....	50%
Niagara, No. 25, 1 1/4 in., 19¢; 2	
in., 20¢	
No. 26, Troy, 1 1/4 in., 19¢; 2 in., 16¢	
Star, No. 26.....	1 1/4 1 1/2 2 in., 20%
Tackle Blocks—See Blocks.	

Pumps—

Clatern.....	60%
Pitcher Spout.....	75¢@10¢@80
Wood Pumps, Tubing, &c.....	50%
Barnes Mfg. Co.,	
dbl. Acting (low list).....	50%
Pitcher Spout.....	80%
Daisy Spray Pump.....	1/2 doz. \$6.50
Goulds Mfg. Co.,	
Double-Acting Thresher Tank.....	\$5.00
Diaphragm No. 3, Side Suction.....	\$14.50
Empire, Advance, Seneca, D. A.	
Shallow and Deep Well (low	
list).....	50%
Spraying and Whitewashing.....	\$2.45
F. E. Myers & Bros. (low lists):	
Double Acting Force and Lift:	
Cistern and Well; House; Wind-	
mill; Ratchet Handle; Pump	
Stands; Hydro-Pneumatic; Bull-	
dozer Power; Spray; Ashland	
Force and Lift.....	50%
Thresher Tank—Myers and Faul-	
less Low Down Tank.....	\$5.90
Century Low Down Tank, No.	
470.....	\$3.25
Century Low Down Ratchet Han-	
dle Tank, No. R470.....	\$5.50

Pump Attachments—

Chicago Hdw. & Fdy. Pump Spout	
Attachments, each.....	\$0.27

Pump Leathers—

Plunger and Valve Leathers—Per	
gro.....	
No.....	1 2 3 4
1.....	\$3.00 6.00 7.00 8.00
Cup Leathers—Per 100:	
Inch.....	2 1/2 3 3 1/2 4
1.....	\$5.00 7.00 9.00 12.00

Punches—

Saddlers' or Drive, good,	
doz. 50¢@75¢	
Spring, single tube, good qual-	
ity.....	\$1.75
Revolving (4 tubes).....	doz. \$3.50
Remis & Call Co.'s Cast St'l Drive.....	50%
Elmore Tool Mfg. Co.,	
Machinists' Center.....	40%
Tinner's Solid, 50%; Prick.....	50%
Morrill's Nos. 1A, 1A, 1B, 1C,	
1D, \$15.00.....	50%
Hercules, 1 die, each \$5.00.....	50%
Niagara Hollow Punches.....	40%
Niagara Solid Punches.....	55%
Tinner's Hollow, P. S. & W. Co.,	
Tinner's Solid, P. S. & W. Co.,	
doz., \$1.44.....	40¢@10%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron,	
1 1/4 in., 1b., 30¢	
Sliding Door, Wrought Brass,	
1 1/4 in., 1b., 30¢	
Cronk's:	
Double Braced Steel Rail.....	1/2 ft. 2 1/4¢
O. N. T. Rail.....	2 1/4¢
Griffin's:	
100 ft., 1 x 3-16 in., \$3.25;	
1 1/4 x 3-16 in., \$3.75.	
Hinged Hanger, 100 ft., 1 x 3-16	
in., \$3.50; 1 1/4 x 3-16 in., \$4.00.	
Lane's:	
Hinged Track, 100 ft.....	\$3.45
O. N. T., 100 ft., 1 in., \$3.12 1/2;	
1 1/4 in., \$3.45; 1 1/2 in., \$4.00.	
Standard, 1 1/4 in.....	100 ft. \$1.00
Lawrence Bros.,	
1 x 3-16 in., 100 ft., \$7.50; 1 1/4 x	
3-16 in., \$8.75.....	55¢@7 1/2%
Trolley, No. 301, 1/2 ft.....	9¢
McKinney's:	
Hinged Hanger Track, 1/2 ft., 1 1/4	
in., \$3.50.....	60¢@5%
1 x 3-16 Track.....	55¢@7 1/2%
Myers' Stayon Track.....	60¢@10%
Richards Mfg. Co.,	
Common, 1 x 3-16 in., \$3.00; 1 1/4 x	
3-16 in., \$3.25; 1 1/2 x 3-16, \$3.50.	
Special Hinged Hanger Rail.....	60¢@10%
Lag Screw Rail, No. 65.....	50%
Gauge Trolley Track, 1/2 ft., No. 31,	
9¢; No. 32, 1 1/4 in., \$3.25, 20¢.	
No. 50.....	60¢@10%
Nos. 61, \$3.00; 62 \$3.25; 63 \$3.50; 64,	
\$1.00; 65 \$3.25; 66 \$3.50; 69, No. 1,	
\$3.25; 68, No. 2, \$3.50.	

Rakes—

Cronk's:	
Steel Garden; Champion, 1/2 doz.,	
12-tooth, \$3.75; 14-tooth, \$1.00; 16-	
tooth, \$1.25; Ideal, 1/2 doz., 12-	
tooth, \$3.00; 14-tooth, \$3.30; 16-	
tooth, \$3.60.	
Victor, 12-tooth, \$2.25; 14-tooth,	
\$2.50; 16-tooth, \$2.75.	
Queen City Lawn, 1/2 doz., 20 teeth,	
\$2.35; 21, \$2.50.....	net
Anticlog Lawn, 1/2 doz.....	\$3.50
Malleable Garden.....	7 1/2¢@10%
Ideal Steel Garden, 1/2 doz., 12 teeth,	
\$15.00; 11, \$16.00; 16, \$18.00.....	80%
Kohler's:	
Jumbo Lawn, 36-tooth.....	1/2 doz. \$5.00
Lawn Queen, 20-tooth.....	1/2 doz. \$2.55
Lawn Queen, 24-tooth.....	1/2 doz. \$2.75
Paragon, 20-tooth.....	1/2 doz. \$2.40
Paragon, 24-tooth.....	1/2 doz. \$2.50
Steel Garden, 14-tooth.....	1/2 doz. \$2.40
Malleable Garden, 14-tooth.....	1/2 doz.
	\$1.75@2.00

Rasps, Horse—

Diston's.....	75%
Holler Bros.....	70¢@70¢@10¢@5%
Liveright Bros.' Gold Medal.....	70%
McCauley's American Standard.....	60¢@10¢@5%
New Nicholson.....	70¢@10¢@75%
See also Files.	

Sisal, Tarred, Medium Lath
Yarn:
Pure 1b. 6¢ @ 7¢
Cotton Rope:
Best, 1/4-in. and larger 16¢ @ 20¢
Medium, 1/4-in. and larger 15¢ @ 16¢
Common, 1/4-in. and larger 7¢ @ 12¢
In coils, 1/2¢ advance.

Jute Rope:
Rope, No. 1, 1/4-in. and up
1b. 5¢ @ 5 1/2¢

Wire Rope—

Galvanized 47¢ @ 52 1/2¢
Plain 55¢ @ 62 1/2¢

Ropes, Hammock—

Covert Mfg. Co.:
Jute, \$0.75 @ \$0.83; Sisal... \$0.82 @ \$0.90

Rules

Boxwood 60¢ @ 65¢
Ivory 25¢ @ 55¢

Chapin-Stephens Co.:
Boxwood 60¢
Flexfold 40¢
Ivory 25¢ @ 25¢ 10¢
Miscellaneous 50¢ @ 50¢ 10¢
Stephens' Combination 55¢
Stationers' 50¢ @ 50¢ 10¢

Keuffel & Esser Co.:
Folding, Wood 35¢ @ 10¢
Folding, Steel 33¢ @ 10¢
Lufkin's Steel 50¢ @ 10¢
Lufkin's Lumber 50¢ @ 10¢
Upson Nut Co.:
Upson Nut Co., Boxwood 60¢ @ 55¢

Saws—

Atkins:
Circular 45¢
Band 50¢ @ 50¢ 10¢
Butcher Saws 50¢
Cross Cuts 35¢
One-Man Cross Cut 40¢
Narrow Cross Cut 50¢
Hand, Hip and Panel 35¢ @ 5¢
Miter Box and Compass 40¢
Maul, Mill and Drag 45¢
Wood Saws 40¢ @ 10¢

Chapin-Stephens Co.:
Turning Saws and Frames 30¢ @ 30¢ 10¢

Disston's:
Circular, Solid and Ins'ted Tooth 50¢
Band, 2 to 18 in. wide 60¢
Band, 1/4 to 1 1/2 60¢
Crosscuts 45¢
Narrow Crosscuts 50¢
Maul, Mill and Drag 40¢
Framed Woodsaws 25¢
Woodsaw Blades 25¢
Woodsaw Rods, Tinned 15¢
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 25¢
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1, 0, 00, Combination 25¢
Compass, Key Hole, &c. 40¢
Hand Ice Saws 35¢
Butcher Saws and Blades 30¢

C. E. Jennings & Co.:
Back Saws 16¢ @ 7¢
Butcher Saws 25¢ @ 7¢
Compass and Key Hole Saws 33¢ @ 7 1/2¢
Framed Wood Saws 25¢ @ 7 1/2¢
Hand Saws 12¢ @ 7 1/2¢
Wood Saw Blades 33¢ @ 7 1/2¢

Millers Falls:
Butcher Saws 15¢ @ 10¢
Star Saw Blades 15¢ @ 10¢

Massachusetts Saw Works:
Victor Kitchen Saws 40¢ @ 10¢ 50¢
Butcher Saws Blades 35¢ @ 10¢
Peace & Richardson's Hand Saws 30¢

Simonds:
Circular Saws 45¢
Crescent Ground Cross Cut Saws 30¢
One-Man Cross Cuts 40¢ @ 10¢
Gang Mill, Mulay and Drag Saws 40¢
Band Saws 25¢ @ 25¢ 7 1/2¢
Back Saws 25¢ @ 25¢ 7 1/2¢
Butcher Saws 35¢ @ 35¢ 7 1/2¢
Hand Saws 25¢ @ 25¢ 7 1/2¢
Hand Saws, Bay State Brand 45¢
Compass, Key Hole, &c. 25¢ @ 25¢ 7 1/2¢
Wood Saws 40¢ @ 7 1/2¢

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 55¢

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. 40%

Disston's:
Concave Blades 25¢
Chromol Blades 35¢
Hack Saw Frames 30¢
Simonds, 35¢; Bay State, 40¢; Culley 35¢

C. E. Jennings & Co.:
Hack Saw Frames, Nos. 175, 180 40¢ @ 7 1/2¢
Hack Saws, Nos. 175, 180, complete, 40¢ @ 7 1/2¢

Goodell's Hack Saw Blades 40¢ @ 7 1/2¢

Griffin's Hack Saw Blades 35¢ @ 5¢ 10¢

Griffin Co. Hack Saw Blades 50¢

Sterling Hack Saw Blades 30¢ @ 10¢ 50¢

Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00. 10¢

Victor Hack Saw Blades 20¢

Victor Hack Saw Frames 40¢

Victor Hack Saw Machines, each, \$75.00

Scroll—

Barnes, No. 7, \$15 25¢

Barnes' Scroll Saw Blades 40¢

Barnes' Velocipede Power Scroll Saw without boring attachment, \$18; with boring attachment, \$20. 20¢

Lowter, complete, \$10.00 15¢ @ 10¢

Rogers, complete, \$3.50 and \$4.00. 15¢ @ 10¢

Scales—

Union Platform, Plain \$2.10 @ 2.20

Union Platform, Stpd. \$2.20 @ 2.30

Chatillon's:
Eureka 25¢
Favorite 40¢
Grocers' Trip Scales 50¢
Reading Hardware Co. 50¢ @ 50¢
The Standard Portables 40¢
The Standard H. R. and Wag-

Scrapers—

Chapin-Stephens Co., Box 30 @ 30¢ 10¢

Richards Mfg. Co., Foot 60¢

Screws—Bench and Hand

Bench, Iron, doz., 1 in., \$2.50 @ 2.75; 1 1/2, \$3.00 @ 3.25; 1 3/4, \$3.50 @ 3.75

Bench, Wood 20¢ @ 20¢ 10¢

Hand, Wood 70¢ @ 70¢ 10¢ 10¢

Chapin-Stephens Co., Hand 70¢ @ 70¢ 10¢ 25¢

Coach, Lag and Hand Rail—

Lag, Cone Point 75¢ @ 10¢ 5¢

Coach, Gimlet Point 75¢ @ 10¢

Hand Rail 70¢ @ 70¢ 75¢

Jack Screws—

Standard List 70¢ @ 70¢ 75¢

Millers Falls 50¢ @ 10¢ 10¢

Machine—

Cut Tread, Iron, Brass or Bronze:

Flat Head or Round Head, 50¢ @ 50¢ 10¢

Fillister Head 40¢ @ 40¢ 10¢

Rolled Thread, F. H. or R. H. Iron 75¢ @ 10¢

F. H. or R. H., Brass, Nos. 8 to 14 65¢ @ 10¢

Set and Cap—

Set (Iron) 75¢ @ 10¢ 7 1/2¢

Set (Steel), net advance over Iron 25¢

Sq. Hd. Cap 70¢ @ 10¢ 7 1/2¢

Hex. Hd. Cap 70¢ @ 10¢ 7 1/2¢

Rd. Hd. Cap 50¢ @ 7 1/2¢

Fillister Hd. Cap 60¢ @ 7 1/2¢

Wood—

List July 23, 1903.

Flat Head, Iron 87¢ @ 45¢

Round Head, Iron 85¢ @ 45¢

Flat Head, Brass 90¢ @ 45¢

Round Head, Brass 77¢ @ 45¢

Flat Head, Bronze 75¢ @ 45¢

Round Head, Bronze 72¢ @ 45¢

Drive Screws 87¢ @ 45¢

Scythes—

Per doz.

Plain Grass, Cutting Edge Polished \$6.25 @ \$6.50

Clipper, Bronzed Web \$6.50 @ \$6.75

Solid Steel, Web and Backs Polished \$7.00 @ \$7.25

Bush, Weed and Bramble, Painted \$6.50 @ \$6.75

Grain, Painted, Cutting Edge Polished \$8.25 @ \$8.50

Clipper Grain, Bronze Web \$8.50 @ \$8.75

Seeders, Raisin—

Enterprise 25¢ @ 30¢

Sets—Awl and Tool—

Fray's Hollow Tool Handles, Nos. 1, \$12; 2, \$16; 3, \$12 50¢

Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18. 20¢ @ 10¢

Sets, Nail—

Octagon gro. \$3.50 @ 3.75

Buck Bros. 27¢

Elmore Tool Mfg. Co. 30¢

Mayhew's \$0.30

Snell's Corrugated Cup Pt. 40¢ @ 10¢

Snell's Knurled, Cup Pt. 40¢ @ 10¢

Victor Knurled, Cup Pt. \$0.75

Rivet—

Regular list 75¢ @ 75¢ 10¢

Saw—

Atkin's:
Criterion 40¢
Adjustable 40¢
Disston's Star, Monarch and Triumph 30¢
Giant Royal Cross Cut \$0.60

Merrill's No. 1 \$15.00

Nos. 3 and 4, Cross Cut \$20.60

No. 5, Mill \$30.00

No. 10, 11, 95 \$15.60

No. 1 Old Style \$10.00

Special \$16.25

Royal Hand \$0.35

Seymour Smith & Son's 65¢

Taintor Positive \$0.42

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones \$1.50

Mounted Kitchen Sand Stone \$1.50

Natural Grit Carving Knife \$3.00

Quick Cut Emery Carving Knife Hones, \$0.50 \$1.50

Quick Edge Pocket Knife Hones, \$0.50 \$2.50

Lawn Mower—

Pike Mfg. Co., 12, 14, 16, 18 and 20 in., doz., \$8.00 33 1/4¢

Shavers, Beef—

Enterprise Mfg. Co. 25¢ @ 30¢

Shaves, Spoke—

Iron doz. \$1.25

Wood doz. \$2.00

Chapin-Stephens Co. 30¢ @ 30¢ 10¢

Millers Falls Co., \$0.15 @ 10¢

Seymour Smith & Son's 30¢

Shears—

Cast Iron, 7 8 9 in.

Best \$16.00 18.00 20.00 gro.

Good \$13.00 15.00 17.00 gro.

Cheap \$5.00 6.00 7.00 gro.

Straight Trimmers, &c.:

Best quality Jap. 70¢ @ 10¢ 5¢

Best Quality Nickel 60¢ @ 10¢ 5¢

Tailors' Shears 40¢ @ 40¢ 10¢

Acme Cast Shears 40¢

**Columbian Cutlery Co.:
Sheep, 1900 list 30¢ @ 10¢ 5¢**

Grass 50¢ @ 10¢

Horse or Mule 50¢ @ 10¢

**W. H. Compton Shear Co.:
Japan Handles, Nickel Blades 60¢ @ 10¢ 5¢**

Full Nickel 50¢ @ 10¢ 5¢

Tailors' 30¢

**J. Wiss & Sons Co.:
Best Quality Jap d 60¢ @ 10¢**

Best Quality Nickeld 50¢ @ 10¢

Tailors' 25¢

Tinners' Snips—

Steel Blades 20¢ @ 20¢ 10¢

Steel Laid Blades 30¢ @ 10¢

Acme Cast Snips 40¢

W. H. Compton Shear Co., Forged Steel Handles 35¢

Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in. 33¢ @ 7 1/2¢

Niagara Snips 40¢

P. S. & W. Forged Handles 25¢

Forged Handles, Steel Blades, Samson 40¢ @ 40¢ 5¢

Triumph Stove Pipe, doz. \$6.00

**J. Wiss & Sons Co.:
Wiss Forged Steel 25¢**

Pruning Shears—

**Columbian Cutlery Co.:
Hedge, Wilcut Brand 60¢ @ 10¢**

Lawn and Border, Wilcut Brand, 60¢ @ 10¢

W. H. Compton Shear Co., Dropped Forged Steel 35¢

Cronk's Hand Shears 33¢

Cronk's Wood Handle Shears 33¢

Disston's Combined Pruning Hook and Saw, \$0.10, doz. \$18.00 25¢

Disston's Pruning Hook only, \$0.10, doz. \$12.00 25¢

**J. T. Henry Mfg. Co.:
P. S. & W. Co. 40¢**

P. S. & W. Co. 40¢

**Seymour Smith & Son's:
Hand Shears 70¢**

Standard Tree Pruners 75¢ @ 10¢

Wood Handle Pruning Shears 40¢

Sheaves—Sliding Door—

Reading 40¢

R. & E. list 15¢

Sliding Shutter—

Reading list 40¢

R. & E. list 15¢

Shells—Empty—

**Brass Shells, Empty:
Climax, 10 and 12 gauge 60¢ @ 5¢**

Club, Rival, 65¢; First Quality, 60¢ @ 5¢

**Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge 10¢**

Climax, 10 and 12 gauge, Newer grade 10¢

New Club, 10 and 12 gauge, Rival Grade 10¢

New Climax, Defiance 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20¢

Nitro Club 10, 12, 16 and 20 gauge; New Club, 14, 16 and 20 gauge; Repeater Grade 20¢

Shells, Loaded—

Loaded with Black Powder 40¢

Loaded with Smokeless Powder, medium grade 40¢ @ 5¢

Loaded with Smokeless Powder, high grade 40¢ @ 10¢ 10¢

**Union Metallic Cartridge Co.:
New Club, Black Powder 40¢**

Nitro Club, Smokeless Powder, 40¢ @ 5¢

Arrow, Smokeless Powder, 40¢ @ 10¢ 10¢

**Winchester:
Smokeless Repeater Grade 40¢ @ 5¢**

Smokeless Leader Grade 40¢ @ 10¢

Stocks and Dies—

Blacksmiths'.....	50@50 1/2
Curtis Rev'le Hatchet Die Stock.....	25
Derby Screw Plates.....	25
Green River.....	25
Lightning Screw Plate.....	25
Little Giant.....	25
Reese's New Screw Plate.....	25

Stoners, Cherry—

Enterprise.....	25@30
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Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds).....	33 1/2
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Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies.....	40
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Stones, Oil, &c.—

Pike Mfg. Co., 1907 list:.....	
Arkansas S. S. 1, 3 to 5 1/2 in. 2.80	
Arkansas S. S. No. 1, 5 1/2 to 8 in. 3.50	
Arkansas Slips No. 1.....	\$1.00
Lily White Washita, 4 to 8 in. 60	
Rosy Red Washita, 4 to 8 in. 60	
Washita St., Extra, 4 to 8 in. 50	
Washita St., No. 1, 4 to 8 in. 50	
Washita St., No. 2, 4 to 8 in. 25	
Lily White Slips.....	80
Rosy Red Slips.....	90
Washita Slips, Extra.....	80
Washita Slips, No. 1.....	70
Washita Slips, No. 2.....	40
India Oil Stones (entire list).....	33 1/2
Quickcut Emery and Corundum Oil Stone, Double Grit.....	40
Quickcut Emery and Corundum Axe Stone, Double Grit.....	33 1/2
Quickcut Emery Rubbing Bricks.....	40
Hindostan No. 1, 8" x 4" x 1/2" 8	
Hindostan No. 1, Small.....	10
Turkey Oil Stones, Extra, 5 to 8 in.....	80
Queer Creek Stones, 4 to 8 in. 20	
Queer Creek Slips.....	20
Sand Stone.....	6

Scythe Stones—

Pike Mfg. Co., 1907 list:.....	
Black Diamond S. S. 3/4 gro. \$12.00	
Lamotte S. S. 3/4 gro. \$11.00	
White Mountain S. S. 3/4 gro. \$9.50	
Green Mountain S. S. 3/4 gro. \$7.00	
Extra Indian Pond S. S. 3/4 gro. \$8.00	
No. 1 Indian Pond S. S. 3/4 gro. \$7.50	
No. 2 Indian Pond S. S. 3/4 gro. \$5.00	
Leader Red End S. S. 3/4 gro. \$5.00	
Quick Cut Emery.....	\$10.00
Pure Corundum.....	\$18.00
Crescent.....	\$7.00
Emery Scythe Rifles, 2 Coat. \$8.00	
Emery Scythe Rifles, 3 Coat. \$11.00	
Emery Scythe Rifles, 4 Coat. \$13.00	
Balance of 1907 list 33 1/2	
Lectro (Artificial), 3/4 gro. \$12.00 33 1/2	
Lightning (Artificial), 3/4 gro. \$12.00 33 1/2	
Lightning (Artificial), 3/4 gro. \$12.00 33 1/2	

Stoppers, Bottle—

Victor Bottle Stoppers.....	3/4 gro. \$9.00
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Stops— Bench—

Millers Falls.....	15@10
Morrill's, No. 2, \$12.50.....	50
Morrill's, No. 2, \$12.50.....	50
Seymour Smith & Son's.....	60

Door—

Chapin-Stephens Co.....	50@50 1/2
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Plane—

Chapin-Sterens Co.....	20
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Straps— Box—

Acme Embossed, case lots.....	20@10 1/2
Cary's Universal, case lots.....	20@10 1/2

Stoppers, Razor—

Pullman Safety Razor Blade, doz.....	\$8.50
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Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....	25@25 1/2
P. S. & W. Co.....	40@10 1/2

Swings, Lawn—

Myers' Low Down Roller.....	\$6.25
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Tacks, Finishing Nails, &c.

American Carpet Tacks.....	90@25 1/2
American Cut Tacks.....	90@25 1/2
Sweeder's Cut Tacks.....	90@30 1/2
Sweeder's Upholsterers'.....	90@30 1/2
Gimp Tacks.....	90@30 1/2
Lace Tacks.....	90@30 1/2
Trimmers' Tacks.....	90@30 1/2
Looking Glass Tacks.....	6
Bill Posters' and Railroad Tacks.....	90@40
Hungarian Nails.....	80
Finishing Nails.....	70
Trunk and Clout Nails.....	75

NOTE.—The above prices are for straight weights.

See also Nails, Wire.

Double Pointed—

Double Pointed Tacks.....	90@6 tens@—
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Tapes, Measuring—

American Asen's Skin.....	50@—
Patent Leather.....	35@30 1/2
Steel.....	33 1/2
Chesterman's.....	25@30 1/2
Keuffel & Esser Co.....	40@10 1/2
Favorite, Duck and Leather.....	25@25 1/2
Metallic and Steel, lower list.....	35@35 1/2
35@5%; Pocket, 35@35 1/2	

Lufkins:

Asses' Skin.....	10@10 1/2
Metallic.....	30@30 1/2
Patent Bend, Leather.....	25@25 1/2
Pocket.....	40@40 1/2
Steel.....	33 1/2
Wiebusch & Hilger:	
Chesterman's Metallic, No. 34L.....	25
etc.....	25
Chesterman's Steel, No. 1038L.....	35
etc.....	35

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 3/4-inch and larger per 100 lb.....	\$2.55 @ \$2.80
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Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.....	30@35
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Ties, Bale—Steel Wire—

Single Loop.....	82 1/2 @ 10
Monitor, Cross Head, &c.....	70 1/2 @ 10

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.	
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Tops, Chimney—

Iwan Volcano Chimney Tops.....	55
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Tools—Coopers'—

L. & I. J. White.....	20@20 1/2
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Ice Tools—

Gifford-Wood Co.....	15
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Saw—

Atkins' Cross Cut Saw Tools.....	35
Simonds' Improved.....	33 1/2
Simonds' Crescent.....	30

Ship—

L. & I. J. White.....	25
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Torches—

Hammers, Engine, 1/2 doz.....	\$1.50
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Traps—Fly—

Balloon, Globe or Acme, doz., \$1.15@1.25; gro. \$1.50@1.20	
Harper, Champion or Paragon, doz., \$1.25@1.40; gro. \$1.50@1.30	

Game—

Imitation Oneida.....	75@10
Newhouse.....	50@5
Hawley & Norton.....	65@10
Victor.....	75@10
Oneida Community Jump.....	70@5
Stop Trap.....	60
Tree Trap.....	60
Hector.....	75@75 1/2

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12	
Mouse, Round or Square Wire, doz. 85@90	

Trowels—

Disston Brick and Pointing.....	25
Disston Plastering.....	20
Disston "Standard Brand" and Garden Trowels.....	30
Kohler's Steel Garden Trowels, 3/4 gro., 5 in., \$1.80; 6 in., \$6.00	
Never-Break, Forged Steel Garden Trowels, in 1 doz. boxes, 3/4 gro. \$6.50	
Woodruff & McParlin, Plastering.....	25

Trucks, Warehouse, &c.—

McKinney Trucks.....each, net \$10.00	
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Tubs, Wash—

Net, per gross.....	
No. 0 1 2 3	
Galvanized.....	\$29.00 48.00 55.00 62.00

Twine, Miscellaneous—

Flax Twine:	
No. 9, 1/4 and 1/2-lb. Balls. 21@23	
No. 12, 1/4 and 1/2-lb. Balls. 19@21	
No. 18, 1/4 and 1/2-lb. Balls. 16@18	
No. 24, 1/4 and 1/2-lb. Balls. 15 1/2@17 1/2	
No. 36, 1/4 and 1/2-lb. Balls. 15@17	
Chalk Line, Cotton 1/2-lb. Balls. 24@26	
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....	8 1/2 @ 21 1/2
Cotton Wrapping, 5 Balls to lb., according to quality.....	13 1/2 @ 21 1/2
American 2-Ply Hemp, 1/4 and 1/2-lb. Balls.....	19 1/2 @ 21 1/2
American 3-Ply Hemp, 1-lb. Balls.....	18 1/2 @ 16 1/2
India 2-Ply Hemp, 1/4-lb. Balls.....	7 1/2 @ 9 1/2
India 3-Ply Hemp, 1/2-lb. Balls.....	7 @ 8 1/2
2, 3, 4 and 5-Ply Jute, 1 1/2-lb. Balls.....	9 @ 11
Maxon Line, Linen, 1/2-lb. Balls.....	17 @ 17 1/2
No. 26 1/2 Mattress, 1/4 and 1/2 lb. Balls, according to quality.....	30 @ 40 1/2
Wool, 8 to 6 ply.....	36 @ 47 1/2

Vises—

Solid Box.....	60@60 1/2
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Parallel—

Fisher & Norris Double Screw Leg, each, Nos. 2, \$10.50; 3, \$16.00; 4, \$20.50; 5, \$27.00; 6, \$32.00.....	20
Fisher-Brooks Bench and Wood-workers' Vises, No. 0, \$3.80; No. 1, \$5.30; No. 2, \$8.25; No. 3, \$10.50; No. 4, \$13.50.....	40
Merrill's.....	25
Millers Falls Oval Slide Pattern.....	60@10
Parker's:	
Victor, 20@25; Regulars.....	20@25
Vulcan's.....	40@45
Combination Pipe.....	55@60
Prentiss Vise Co.:	
Patent, Bicycle, Shepard, Gipsy, Adj. Column, Lewis Adj. Jaw.....	25
Rapid Transit, Heavy Chipping.....	30
Bull Dog, Anchor Line, Yankee Quick Lever, Lewis Solid Jaw, Eclipse Wrench Attachment.....	40
Monarch.....	45
Vise Jaw C's.....	10
Pullman Automatic Bench, 1/2 doz., No. 1, \$7.50; No. 2.....	\$9.50

Pipe—

Curtis & Curtis Malleable.....	25
Parker's Combination:	
87 Series, 60%; 187 Series, 60.5%; No. 870, 40%.....	25
Prentiss Vise Co.:	
Blake Combination, Prentiss Combination, Prentiss.....	60
Malleable; Monarch Combination.....	65
Rex Combination.....	70
Peerless Pipe Grip.....	25

Saw Filers

Disston's D 3 Clamp and Guide, 3/4 doz., \$24.00, 30%; Clamps.....	30
Reading.....	50@10

Wood Workers—

Prentiss Cabinet Makers'.....	40
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	

Wads—Price per M.

B. E., 11 up.....	60
B. E., 9 and 10.....	70
B. E., 8.....	80
B. E., 7.....	80
P. E., 11 up.....	1.00
P. E., 9 and 10.....	1.25
P. E., 8.....	1.50
P. E., 7.....	1.50
Ely's B. E., 11 and larger.....	\$1.75 @ 1.75
Ely's P. E., 12 to 20.....	\$3.00 @ 3.25

Ware, Hollow—

Store Hollow Ware:	
Enameled.....	45@10
Ground.....	50@5
Plain or Unground.....	60
Country Hollow Ware, per 100 lbs.....	\$2.75 @ \$3.00
White Enameled Ware:	
Maslin Kettles.....	65@10
Covered Wares:	
Tinned and Turned.....	55@10
Enameled.....	45@10
See also Pots, Glue.	

Enameled—

Agate Nickel Steel Ware.....	33 1/2
El-an-gue.....	60@10
Iron Clad Ware.....	70@10
Lava and Volcanic, Enameled.....	40@10

Tea Kettles—

Galvanized Tea Kettles:	
Inch.....	6 7 8 9
Each.....	45 50 60 65

Steel Hollow Ware—

Avery Stamping Co.:	
Never-Break Spiders and Grids.....	65@10
Steel Kettles, Maslin Scotch Bowls, Tin.....	60
Steel Stew Pans; Stew Pots, etc., Porcelain.....	50
Cleveland Stamping & Tool Co.:	
Solid Steel Spiders and Grids.....	65@5
Solid Steel Kettles.....	60@5

Warmers, Foot—

Pike Mfg. Co., Soapstone.....	40@40 1/2
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Washboards—

No.:	
800—Brass King, Single Surface, Open Back.....	\$3.00
801—Brass King, Single Surface, Open Back.....	\$2.50
802—Brass Junior, Single Surface, Open Back.....	\$2.25
862—White Hen, Spiral Crimp Glass.....	\$3.15
964—Royal Blue Enamel, Single Surface, Ventilated Back.....	\$3.25
172—Our Best, Single Zinc, Soap Drainer.....	\$3.25
722—Soap Saver, Single Zinc, Iron Top.....	\$3.35
100—Northern Queen, Single Zinc, Perforated, Open Back.....	\$3.00
134—Universal, Single Zinc, Extra Family Size, Ventilated Back.....	\$2.81
712—Royal, Single Zinc, Extra Family Size, Ventilated Back.....	\$2.50
760—Banner Globe, Single Zinc, Ventilated Back.....	\$2.25
57—Peerless, Double Zinc, Spring Protector.....	\$3.70
56—Red Cross, Double Zinc, Swing Protector.....	\$3.60
17—North Star, Solid Zinc, Swing Protector.....	\$3.60
797—Jewel, Single Zinc, Pail Size.....	\$1.25

Washers—Leather, Axle—

Solid.....	90@90 1/2
Patent.....	90@90 1/2
Coll: 1/4 1 1 1/4 1 1/2 inch.	
9 10 11 12 13 per doz.	

Iron or Steel— 13

Size bolt.....	5 16 3/4 1/2 3/4 1
Washers.....	\$1.90 1.00 2.70 2.50 2.30

The above prices are based on \$6.50 off list.
In lots less than one keg add 1/4¢ per lb.; 5-lb. boxes add 1/4¢ to list.

Avery Stamping Co.:

Standard, in 200 lb kegs, \$6.00 3/4	
100 lb. disc.; in 100 lb kegs, add 10¢ net 3/4	
100 lb. in 5 or 10 lb boxes, add 50¢ net 3/4	
100 lb. in 1 lb boxes, add \$1.00 net 3/4	

Cast Washers—

Over 1/4-inch, barrel lots, per lb. 1 1/2 @ 1 1/4	
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Wedges—

Oil Finish.....	1b. 2 1/4 @ 2 1/2
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Weights—Hitching—

Covert Mfg. Co.....	25
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Sash—

Per net ton, Eastern market, \$25.00@—	
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Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery.....	75
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Well—

8-in., \$2.00; 10-in., \$2.50; 12-in., \$3.00; 14-in., \$4.45.	
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Wire and Wire Goods—

Market and Stone Wire

In Bundles—

27 to 36.....	80@5
Galvanized:	
9 and coarser.....	75@10
10 to 16.....	75@10
17 to 26.....	72½@10
27 to 36.....	72½

